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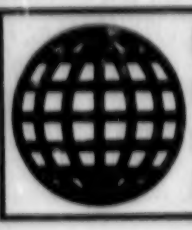

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CONTENTS

[The following are translations of selected articles from ARMEYSKIY SBORNIK [Military Digest], a monthly journal of the Ministry of Defense.]

AT YOUR REQUEST

Col-Gen Sergeyev on Retaining Professionals

94UM0590A Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 2-5

[Interview with Colonel General Anatoliy Ipatovich Sergeyev, commander, Red Banner Volga Military District, by ARMEYSKIY SBORNIK correspondent Lieutenant Colonel V. Kutishchev, occasion, date and place not specified: "The Primary Mission of the Day Is To Preserve Professional Military Cadres"; photograph of Sergeyev included]

[FBIS Translated Text] *That is what Colonel General A. Sergeyev, commander, Red Banner Volga Military District, believes.*

And he does not simply believe it, he is doing it, although we will stipulate right off that there are the very same difficulties here as everywhere. Nevertheless, broad housing construction has unfolded in the district and opportunities and reserves are being sought so that there are schools on the hastily formed military posts and so that places are found in city kindergartens for kids of officers and warrant officers who have arrived from the near and far abroad. Just how is the district command element succeeding in solving the numerous problems?

Recently ARMEYSKIY SBORNIK correspondent Lieutenant Colonel V. Kutishchev met with Colonel General Sergeyev, and he agreed to answer our questions.

[ARMEYSKIY SBORNIK] Comrade Commander, today Volga Military District is one of those to which many units and subunits have been withdrawn from abroad, and many arrived at a bare place, as they say. Despite this, you are finding a solution to such a difficult situation. Just how does the district command element succeed in resolving rather successfully the questions of receiving and accommodating arriving servicemen and their families?

[Sergeyev] Last year was no simple one for us. Ever newer problems and difficulties were added all the while to the ones constantly present. The majority of them above all involved the arrival of units being withdrawn from Western Group of Forces, Poland and the Baltic countries. Suffice it to say that over 100 units were restationed to Volga Military District just in the first half of 1992. A difficult situation also remained in 1993. How did we succeed in solving problems that arose? It depended on the situation.

For example, on the eve of withdrawal of 2nd Guards Tank Army from Western Group of Forces, several district staff and headquarters officers headed by my first deputy, Lieutenant General Anatoliy Aleksandrovich Shapovalov, left for Germany. There they went over many questions, including determining the number of servicemen who had to be given housing and the presumed number of jobs for their wives.

The work which had been done helped resolve essentially all questions connected with accommodating troops being withdrawn from abroad with fewest difficulties. By the way, about knowledge of the situation. A working operations group headed by Major General Vladimir Vasilyevich Kozhevnikov was set up in the district to support the reception of units and subunits. At any moment his subordinates can report the location on the route of a particular train with equipment, property or personnel and when it will arrive at the destination.

By the time the train arrives we bring up hot food and allocate necessary equipment for unloading property. As a result of well thought-out, well-organized work, the district for now has not paid a single ruble of penalty for railcar layover. Moreover, this permitted new arrivals to be "included" in combat training and district life in an organized manner and without wasted motion.

I should note that we would not have been able to resolve problems of accommodating and settling-in arriving units qualitatively and effectively without the help of local authorities of Samara, Perm, Penza and Saratov oblasts. I wish to say many thanks to the heads of Samara Oblast. Thus, thanks to good relations with Vasiliy Ivanovich Yavon, head of Volzhskiy Rayon Administration, military units being withdrawn from Germany were accommodated on land especially earmarked for them.

Or take Kinel-Cherkasy. When the Russian helicopter regiment arrived from Telavi, Vladimir Mikhaylovich Garayev, head of the rayon administration, immediately allocated a dormitory for officers and warrant officers and helped solve problems with school, meals and medical services. And now, thanks to close interworking with local authorities, the district is succeeding in solving many problems, including social protection of servicemen and their families.

[ARMEYSKIY SBORNIK] Anatoliy Ipatovich, still, what are the most acute problems connected with the arrival of troops from abroad that the command element and you personally have occasion to encounter?

[Sergeyev] Cadres and housing. It is no secret to anyone that on encountering disorder in everyday life, officers and warrant officers write requests to be discharged from the ranks of the Armed Forces into the reserve, and others leave to serve in armies of CIS countries. Therefore to preserve military cadres it is necessary to solve the so-called apartment problem, and here is where many of our troubles begin.

I will remind you that many units were withdrawn from abroad to unprepared sites. Naturally, building barracks and residences in short time periods was out of the question, but we did everything we could, and even more than was possible. As a result, well-known foreign firms received contracts for building military posts and began work immediately, so houses are being built for officers and warrant officers.

But again, unanticipated difficulties arose: time periods for placing military posts in operation ended up being

disrupted. We were supposed to receive 100 percent of housing with all infrastructure in the city of Chaykovskiy (Perm Oblast), and 700 apartments, a school, a kindergarten and stores in the settlement of Chernorechye (Samara Oblast) at the end of 1993. But it took foreign firms another two months to finalize and complete the facilities. In other words, servicemen and their families had to live through the winter by renting someone else's rooms and taking shelter in overcrowded dormitories and enlisted men's barracks refurbished as housing.

But despite such difficult conditions, the district command element continues to do everything to see that officers are settled in new homes. And the personnel have seen that people really are thinking about them. As a result, the number of servicemen desiring to part with the Army dropped sharply in the latter half of last year. Today we already can say that the situation connected with preserving professional military cadres in the district has stabilized. This is the chief result of the work.

[ARMEYSKIY SBORNIK] Continuing the conversation about social protection of servicemen and problems connected with it, here is what I would like to ask. Social protection is not only a roof over your head, but also guaranteed jobs for officer and warrant officer wives, kindergartens, nurseries, schools... How are these problems being solved?

[Sergeyev] Unfortunately, things are far from how we would like them to be. Yes, on traveling to a new duty station, Russian officers and their families long ago became accustomed to being awaited by disorder of everyday life, but in our days this results in family dramas and even tragedies for many. Judge for yourself. In 1992, 93 district families broke up for the reasons I mentioned. Over 150 children were left without fathers. Last year there were somewhat fewer such instances. Nevertheless, a trend clearly can be traced toward a breakup of officer families because of the disorder of everyday life.

But in my view, the most terrible thing is that disorders of family life are becoming one of the reasons for extraordinary incidents. Thus, officers and warrant officers accounted for two-thirds of all suicides and attempted suicides in 1992, and 43 percent of them had served 18 or more years, having given their best years to the Army. But when the job of their entire life approached its conclusion, they ended up being no better off than before. Many officers at age 40-50 have neither their own place to live, nor friends, nor loved ones, nor work at the new place. Uncertainty about tomorrow and poor social protection of servicemen shove some of them over the brink.

Such terrible statistics forced us to give more attention to analyzing the causes for such extraordinary incidents and taking preventive steps. And so recently a sociological study was conducted by the district educational work department. Its goal was to determine just how servicemen assess their social protection. Junior officers were surveyed.

The results showed the following. The overwhelming majority (80 percent) believe that from a social aspect they are not protected at all. Moreover, in their opinion the laws adopted give only an appearance of concern for servicemen, since the rights and benefits declared in them are not and will not be correlated with the state's economic capacities either today or in the foreseeable future.

Therefore the district command element sees that providing servicemen with housing is one of the most important tasks. Today this is the primary element, and by grasping it we will be able to solve many problems; above all, I repeat, we will retain professional military cadres. And the words are no different from the actions: we are succeeding in providing officer personnel with modern, well-equipped apartments. The command element has put in much effort to see that administrations of oblasts and republics on whose territory the Volga Military District is located (and this is seven republics and seven oblasts) nevertheless repay housing debts. Of course, this is not enough to resolve the apartment problem fully once and for all.

Several units are in the most difficult situation now, particularly Chernorechye Garrison. We have succeeded in providing officers and warrant officers here only with temporary housing. To maintain the people's morale at least in some way, I set precise time periods for those on the apartment waiting list, which I personally monitor. I have on my desk the plans of all houses being built and to be turned over, where each apartment and its future owner are noted.

I will say more: the decision has been made not to exclude officers from housing waiting lists even in case they are discharged from the Armed Forces. All this inspires in people a certain amount of confidence in tomorrow.

And we are doing everything we can with respect to schools, kindergartens and jobs for servicemen's wives. Thus, we refurbished a training building as a school for children of Chernorechye. We achieved the allocation of more than 1,500 places in kindergartens and found jobs for around 400 servicemen's wives. For its part, the oblast administration headed by Konstantin Alekseyevich Titov provided buses for a new line linking the military garrison with the city.

We succeeded in introducing new positions for a pediatrician and gynecologist in tables of organization of regimental aid stations at remote military garrisons.

Heads of enterprises and kolkhozes also regard our problems with understanding. For example, five sovkhozes concluded a contract with the Chernorechye Garrison command element for vegetable deliveries and also set aside 100 garden plots for officers and warrant officers.

This is everything we are capable of giving the people for now.

[ARMEYSKIY SBORNIK] Anatoliy Ipatovich, you said it well about the need for moral and psychological support of officers, warrant officers and their families. But an entire institution has existed in the Army for almost two years and one of its main tasks is social protection of servicemen. The next question in connection with this: Did deputy commanders for educational work succeed in finding their place in such a difficult situation?

[Sergeyev] Without question. The person and concern for him always have been in first place for district educational structures, and today especially. Therefore social protection of servicemen and their families has become a priority direction in their activity. And to the honor of deputy commanders for educational work, they were up to it under the present very difficult conditions. I can say boldly that the majority of them have become the commander's right hand.

People in the garrisons know officers Davydov, Kalashnikov, Mukhin, Bokarev, Kukharenko and Abdulin well, because they have seen that it is always possible to get sensible advice and specific help from them.

I could mention many more names of officers of educational structures who always are where their word, experience and knowledge are required. But this is not the important thing. The fact is that our district departed long ago from mass campaigns for work with servicemen and their families. Forms and methods have entered into practice which above all ensure a sufficiently high level of discipline in each military unit and generate in servicemen a desire to serve for the good of Russia. That sounds somewhat bombastic, but it is so.

Some may think that this district commander has somewhat exaggerated the services of officers of educational structures. By no means. I have said more than once that in the course of Armed Forces reform the most trained and experienced cadres have remained who are capable not only of competently organizing and conducting educational work, but also really helping the commander strengthen discipline and regulation order, working with people individually, and specifically influencing the collective.

And one need not go far for an example. Take officers in the educational work department. They are professionals of a high class. They cope successfully with a colossal amount of work which has fallen to their lot today. And in so doing they provide many-sided, practical assistance to formation and unit commanders in training officers in various forms and methods of work with servicemen.

[ARMEYSKIY SBORNIK] And the last question. What will you say to those officers and warrant officers who are preparing to be replacements in the Red Banner Volga Military District?

[Sergeyev] I wish to say that you are awaited in the district troops, comrade officers and warrant officers. We have a great need for conscientious commanders and their deputies who have initiative and are true to their cause. We need engineers, builders, and rear services officers. You also will find interesting, honorable service in the 27th Guards Motorized Rifle Division, which is the basis of Russia's peacemaking forces.

There are many famous units and formations of 2nd Guards Tank Army in the district today whose colors are adorned with numerous orders. Frontlinesmen's traditions are solicitously preserved here. Your experience and knowledge will come in handy for serving in training units of the district training center, where methods specialists and skilled educators of future junior commanders and specialists are so needed.

And let the temporary difficulties and disorder of everyday life not disturb you. Broad housing construction has unfolded. Not one family will be left without housing. I guarantee that in closed garrisons you will receive a modern two or three room apartment within a year, and these are not simply words. A young officer must build his life reliably and firmly, and what can be more reliable than a large, friendly family?!

We await you. The Red Banner Volga Military District is a special district. It is located in the center of Russia and is the base for mobile forces and the forge of strategic reserves. This means that superbly trained specialists, masters of their work, are needed here.

THE ARMY: PROBLEMS, SOLUTIONS

Problems of Russian Peacemaking Detailed

94UM0590B Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 6-8

[Article by Colonel V. Cheban, ARMEYSKIY SBORNIK military-political analyst-stringer, doctor of philosophical sciences: "Different Facets of Peacemaking"]

[FBIS Translated Text] The article "Does Russia Need An Army? was published in ARMEYSKIY SBORNIK, No 1 (July 1994) under the rubric "Military-Political Review." Colonel V. Cheban, doctor of philosophical sciences, our military-political analyst-stringer, presides over this rubric.

The tragic experience of armed conflicts of recent years shows they cannot resolve themselves. Aggressive actions along all channels of public life are needed to eliminate them. In short, we need peacemaking, a special kind of social practice and a method of political activity aimed at preventing and eliminating armed conflicts. It is proposed to subordinate and coordinate all elements in it. Some of the elements quell the raging flame of a conflict, others rake aside smoldering embers, still others remove combustibles to a safe place, and yet others constantly monitor the change in temperature of ethnic, social and interstate relations.

Unfortunately, today more and more often one sees only the firemen, i.e., the military, momentarily on television screens in reports from conflict zones. This means the military component of peacemaking is being given, if not the most importance, then very great importance in resolving controversial problems.

The thought involuntarily creeps in that politicians and diplomats each time are late with an adequate, comprehensive reaction to a rise in sociopolitical temperature and begin to act vigorously only when flame appears and only when it threatens to singe their own reputations. Naturally, at the given moment all hopes rest on the firemen. Meanwhile, an analysis of armed conflicts throughout the world, including on former Soviet Union territory, eloquently attests to the fact that the role of military force in the peacemaking process should not be primary for a number of reasons.

First of all, military intervention cannot eliminate the causes of a conflict which are hidden in the thick of economic, sociopolitical and ethnic contradictions.

Secondly, even with appropriate and qualified application (which is not that easy to achieve), military force is capable of performing only rough work of clearing rubble, stopping the fiery roller of armed conflict, and eliminating bandit forces. But other forces are called upon to carry out delicately organized creative activity based on principles other than "intimidation," "suppression" and "elimination." Therefore the efficiency of peacemaking also should be assessed comprehensively, and not just according to the work of one component, military force.

Thirdly, in an era when the military force method of resolving controversial problems still enjoys great popularity, the use of armed violence under any pretext is perceived with a certain measure of suspicion. And the more often the word "peace" is used paired with the concept "military," the more doubts there are. These suspicions have rather rich historical ground beneath them. Militarism also developed along with civilization. The ability to carry out aggression under the flag of peace was the supreme form of its adaptation to the new conditions. There were frequent instances where one's own fists were tested under the pretext of pulling apart people in a fight. Thus, experts note that combat employment of aircraft of the U.S. and NATO air forces was far from always justified for accomplishing a peacemaking process. The fact is, peaceful residents suffer most often from such actions and participants of "retaliation" gain combat experience.

Fourthly, helping to separate armed enemies always is fraught with several dangers. Above all, the rivals attempt to take advantage of the peacemakers for their own purposes (as a sword against the enemy and a shield for oneself). Strictly speaking, an unfavorable development of events for oneself is assessed either as poor work by the peacemakers or as their "complicity" with the enemy. The history of Russia's "pacification" of Abkhazia and Georgia eloquently indicates this. Praises and insults were heard addressed to Russia depending on the vacillations of military fortune.

There also is the danger of a conflict being mothballed, when its contradictions which have sparked the quarrel are not resolved, but driven deep inside with the help of external military force. When the latter weakens, the contradictions again are exacerbated. Purely everyday logic is at work: You yourself never will learn to solve your own problems by relying only on the help of others.

The involvement of a third party in the peacemaking process harbors potential accusations of "imposing one's own interests" and "following one's own line." Thus, after certain successes by Russia in settling the conflict in the former Yugoslavia, a torrent of suspicions of "imperialism" was heaped on it. And our mediation in the Caucasus and in Tajikistan gave rise to accusations that Russia was pressuring neighbors under the cover of peacemaking efforts. "Cold war" inertia continues to force western analysts to suspect Russia of "imperial thinking."

In late March 1994 the Russian Federation Ministry of Foreign Affairs and Ministry of Defense were forced to come out with a joint statement in which they refuted assertions which had appeared in a number of foreign mass media that "Russia was building up pressure" on CIS countries and demanding for itself the right of "intervening" in their internal affairs.

When we speak of arguments about Russia's involvement in the peacemaking process, the following should be stressed.

Russia is a permanent member of the Security Council and under the UN Charter is responsible for maintaining international peace and security. It has been taking part in peacekeeping operations along UN lines since 1973.

To avoid terminological confusion, it is necessary to distinguish the concepts "peacekeeping forces" and "collective peacemaking forces." At the present time Russian servicemen are part of five UN military observer teams which are part of peacekeeping forces. There are 16 persons in the Near East (8 in Egypt, 4 in Israel, 3 in Syria and 1 in Lebanon), 15 on the Iraqi-Kuwaiti border, 30 in the Western Sahara, 2 in Cambodia and 23 in Yugoslavia.

With respect to Russian military contingents, they are performing peacemaking missions in Bosnia, Tajikistan, South Osetia, the Dniester Region, Georgia and Abkhazia.

A separate battalion has been in Bosnia since April 1992. Its strength was increased to 1,200 persons in January 1994. The battalion performs duty in the "East" sector. Its main body is at 36 checkpoints which separate forward positions of Serbs and Croats. Part of the

Russian battalion numbering 400 persons made a two-day, 500-km march over mountain roads and took up positions along a line of separation to organize supervision of a cease-fire in Sarajevo.

The 201st Motorized Rifle Division with means of reinforcement is part of collective peacemaking forces in Tajikistan. Peacekeeping forces in South Osetia consist of one airborne regiment. Russian peacekeeping forces in the Dniester Republic are represented by four motorized rifle battalions, which are under the purview of a tripartite Russian-Moldovan-Dniester Region commission based on the agreement between Russia and Moldova "On Principles of Peaceful Settlement of the Armed Conflict in the Dniester Region of the Republic of Moldova" of 12 July 1992. Peacekeeping forces were introduced to Georgia and Abkhazia in June 1994.

It should be emphasized that peacemaking on former Soviet Union territory within the scope of the Commonwealth is not Russian "independent activity." In all cases without exception, Russia's actions are being taken at the request of and by consent of the corresponding states and parties in conflict. Peacemaking contingents are sent to "hot spots" based on bilateral and multilateral agreements which meet the rules of international law and provisions of the UN charter. The United Nations and CSCE are regularly informed about the progress of operations.

The general mission of Russian peacekeeping forces reduces to settling extreme situations in zones of interethnic conflicts on CIS territory. The content of their activity includes a set of measures for separating the parties in conflict, escorting humanitarian aid cargoes, evacuating the population from zones of combat operations and threatened areas, providing security and defense of military installations and transportation arteries, preventing the influx of weapons into the conflict zone, clearing terrain of mines and so on.

It is clear from what has been said that it is not a seizure of administrative and political centers, not a show of force on the eve of elections, and not pressure on opposing sides to obtain an exclusive benefit for Russia, but the roughest work there is that Russian peacemakers in military uniform take on, often becoming a living wall between parties in conflict.

This peacemaking work demands no small expenditures. More than R2.5 billion (in 1992 prices) were spent from the Russian Ministry of Defense budget for 1992 alone and over R26 billion for 1993 to finance peacekeeping operations on former Union territory. The presumed cost of peacemaking operations in Georgia and Abkhazia will be R10-100 billion. Servicemen's pay alone will require one billion rubles monthly. Meanwhile, the Federation Council declined the military's proposals to pay the "blue helmets" with a separate line from the state budget. The Ministry of Defense will have to pay for everything, and this with an exacerbation of many problems, including also military organizational development.

The situation concerning financing also is turning out to be difficult in the United Nations. While this international organization previously could finance 2-3 peacemaking operations a year, now money is needed for 17 such operations a year.

More than a hundred Russian servicemen have given their lives on the altar of peacemaking. This dearest price for Russian citizens to pay for peace among peoples proves that in the final account the military is forced to pay for miscalculations of politicians and for the difficult, agonizing path to peace.

This is why, without having involved other peacemaking components in the synchronous work, one need not count on total success in it. A delay in establishing and putting to work a ramified system of peacemaking, a shift of the main load to the military, use of the peacemaking flag to improve the military force method of resolving international problems, and the ambitiousness of politicians, who are ready to throw tens of thousands of human lives into the clutches of death for their own selfish interests—these are the main obstacles in the path of effective peacemaking activity.

Profound comprehension of different facets of the complicated and very difficult peacemaking process is a necessary condition and a means for ensuring its effectiveness and for creating genuinely civilized relations.

Russia's Military Space Forces

94UM0590C Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 9-13

[Article by Major General V. Menshikov, doctor of technical sciences; photograph of author included]

[FBIS Translated Text] In the USSR, just as in the United States, space assets began to be used in support of Armed Forces operations essentially right after the first artificial Earth satellites were launched. It is already impossible to imagine a modern army without space communications, navigation and intelligence systems, equipment for early warning of nuclear missile attack, for topography and geodesy, and so on.

The first military units with a space purpose were established in the Strategic Missile Troops in connection with preparations for launching the first satellite. By the end of the 1950's the organizational structure of "space units" included a test directorate, separate engineering-test units and the telemetry complex at the Baykonur Range; and scientific-test directorates and separate scientific measurement stations of the Space Command, Control and Telemetry Complex (KIK) Center. The Ministry of Defense Central Directorate of Space Assets was formed in 1964 to centralize the work of creating new space assets and promptly resolve questions of their use; Major General A. Karas became its chief. The next step was this structure's reorganization as the Main Directorate of Space Assets (GUKOS) in 1970. It was

headed by Colonel General A. Karas, and from 1979 by Major General A. Maksimov.

In connection with the increased scope of missions being performed from outer space in direct support of the General Staff and of all branches of the Armed Forces, the Main Directorate of Space Assets and its subordinate units were removed from the Strategic Missile Troops and subordinated to the USSR Minister of Defense in 1982. Finally, within the scope of Russian Armed Forces reform the Military Space Forces were separated out organizationally by order of the Minister of Defense on 10 August 1992. Colonel General V. Ivanov became their commander.

Such a transformation of the table of organization structure of the Military Space Forces—from separate space units to the Military Space Forces as a combat arm of central subordination—reflected the objective process of development of space assets and the elevation of their role in performing missions assigned to the Armed Forces.

We will note that the establishment of military space forces in the United States followed a similar path: initially separate space units were formed, then Air Force, Navy and Army space commands. A unified Space Command was established in the United States by the latest decisions.

The modern Russian Federation Military Space Forces are outfitted with means for insertion of and command and control of orbital groupings; spacecraft for imaging and radiotechnical surveillance and for early warning of ballistic missile launches; and space communications, relay, navigation, topography, geodesy and meteorology systems and complexes. They are distinguished by unique features of being global and highly efficient, which permits providing troops with information either more effectively or with fewer costs compared with nonspace assets for similar purposes.

Using spacecraft for early detection of ICBM launches enabled the transmission of data on foreign ICBM launches in just 1-2 minutes after their takeoff. Space assets permit conducting wide-scale surveillance of the deployment areas of land-based and sea-based missiles thanks to an appropriate orbital arrangement.

Communications, data relay and television broadcasting via satellite have found use everywhere. Our own orbital grouping of several dozen spacecraft ensures stable operation of many thousands of communications channels in various modes with subscribers at any points on the globe; essentially real-time data transmission via relay satellites between ground, sea, airborne and space transceivers; and television broadcasting, which is especially important for regions of Russia remote from Moscow.

Spacecraft were among the first to begin to be used for navigation in the Navy. In contrast to the first navigation-communications satellites, which helped determine coordinates of objects only at a very specific time and with great error, modern spacecraft give a consumer the possibility of computing the location of an object at any point on Earth with an error of only tens of meters and at any point in time. This goes for submarines, ships, mobile ground equipment, aircraft and spacecraft.

The use of space assets for topography and geodesy initially was connected with the need to ensure high accuracy of ICBM warheads on target. This required an appropriate geodetic survey of continents, launchers and targets, updating of the Earth's geophysical parameters, and creation of digital terrain maps. Such data essentially can be obtained only as a result of the accumulation and processing of data coming from spacecraft.

The need to have hydrometeorological information on a global scale dictated the appearance of weather satellites. Now such spacecraft, combined into a permanently functioning system, collect information on the weather situation and transmit it to ground processing points in near-real time.

Launch and command and control troops and the arsenals included in the Military Space Forces are necessary for planning the use, storage, maintenance in requisite readiness, launch, and control of spacecraft. Booster rockets are launched from two ranges (Plesetsk and Baykonur). Surveillance satellites basically are inserted into low orbits (up to 2,000 km), navigation and communications satellites into highly elliptical orbits (up to 20,000 km), and communications satellites and ballistic missile launch early warning satellites into a geostationary orbit (36,000 km). In addition, scientific spacecraft leave for deep space from Baykonur. Preparatory work presently is being done to estimate the advisability of creating an "eastern" range, which can compensate if necessary for a reduction in potential of the Baykonur Space Launch Center.

There are specialized launch support facilities and launch facilities with corresponding testing and servicing equipment, storage facilities for rocket fuel components, fueling stations, power and water supply systems and other special equipment for preflight preparation and fueling of booster rockets and spacecraft; as a whole, it is a unique, costly ground complex. Its reliable operation is possible only on condition that this equipment be operated by highly qualified specialists, whose training is conducted at the St. Petersburg Red Banner Military Space Engineering Academy imeni A. F. Mozhayskiy.

Officers of Military Space Forces study space systems and equipment back in their development stage. They also take part in the flight-design tests of this equipment, and after it becomes operational they prepare spacecraft and booster rockets in the servicing area, launch them and control the craft in orbit. Moreover, using only software, they are capable of detecting and either remedying malfunctions arising on board or reducing their effect on performance of assigned missions to the maximum extent.

Command and control troops are intended for controlling military, national economic and scientific spacecraft (there are more than a hundred of them now in orbit) and are responsible for maintaining the working capacity of spacecraft throughout their entire period of active functioning. They have in their makeup ground space command, control and telemetry complexes (command and control facilities) scattered throughout Russian territory, as well as sea-based facilities on ships. The Main Center of the Space Command, Control and Telemetry Complex performs a coordinating role in the operation of all facilities.

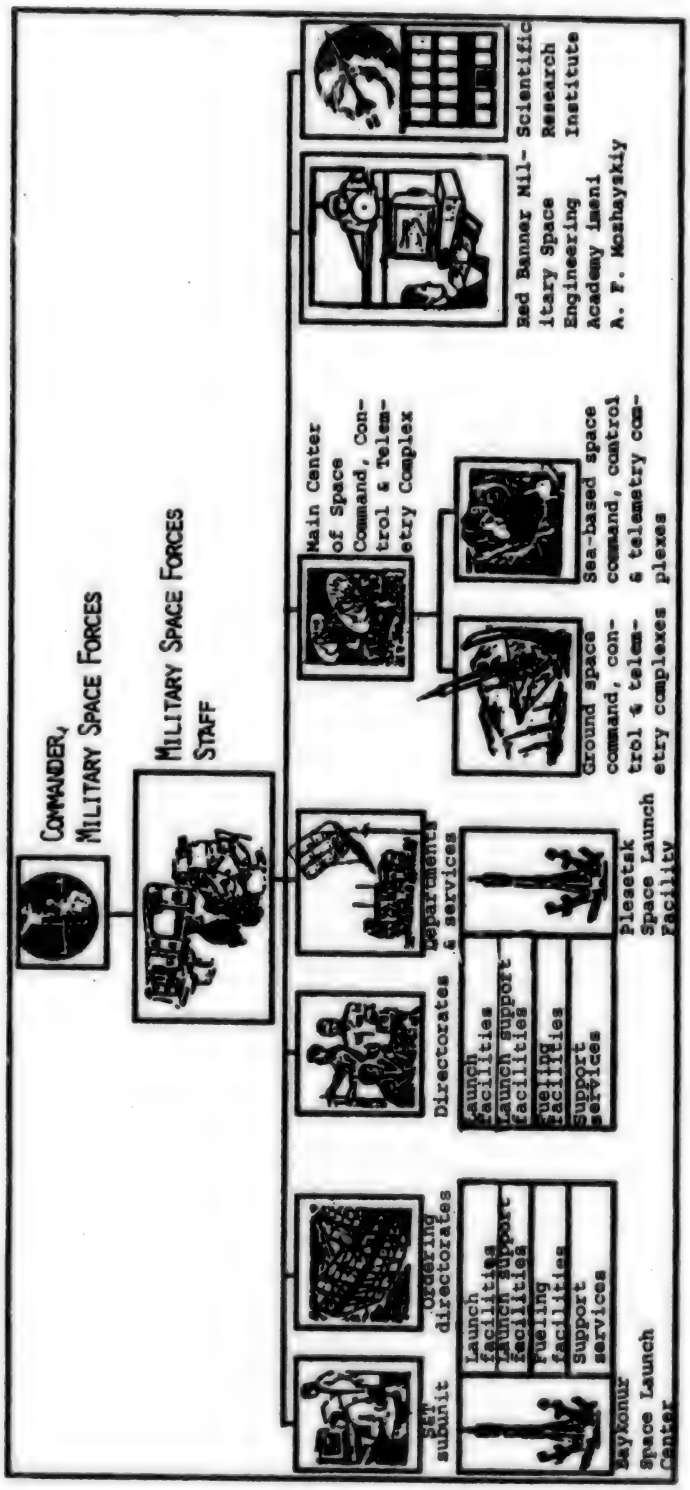
Officers of combat teams of the Main Center and of command and control facilities can load programs for operation of spacecraft gear aboard the craft in advance for lengthy functioning of the satellites or correct them promptly essentially in real time. Teams stand an around-the-clock watch and transmit hundreds of signals in the course of a shift.

The staff, ordering directorates, Scientific-Technical Committee and corresponding services directed by the commander of Military Space Forces organize the use of space systems and equipment, the planning and timely outfitting of troops with modern equipment, and command and control of the Military Space Forces as a whole.

The present organizational structure of the Military Space Forces permits effectively developing and using space systems and equipment in support of the Russian Federation. At the same time, being the successor to the USSR, Russia also takes into account the interests of other CIS countries in its space activity.

The effectiveness of coordination within the CIS framework largely depends on the political, economic and military situation that is taking shape and on the forms of cooperation chosen in accordance with this, which can vary widely. This includes joint military space activity of CIS countries having a space potential within the framework of a collective security treaty, and Russia's provision of services in the area of space activity in support of these states' defense and civilian departments. It must be established for now that there are substantial disagreements in this sphere that at times are far-fetched, and there are subjective evaluations. All this hampers use of the military-scientific potential of Russia, Ukraine, Belarus and Kazakhstan.

In conclusion it should be emphasized that our cosmonautics is faced with difficult and important missions. It is necessary to increase the time periods of active functioning of spacecraft to 7-10 years, improve their reliability, complete experimental development work to create new space complexes and systems, replace obsolete equipment in spacecraft launch and command and control troops, and continue work on multiple-mission means of insertion. Russia's Military Space Forces are taking an active part in fulfilling these tasks.



Block diagram of Russia's Military Space Forces

Russian Armed Forces in the 21st Century

94UM0590D Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) p 14

[Letter by Lieutenant Colonel N. Moshkin: "Armed Forces in the 21st Century"]

[FBIS Translated Text] A military science conference was held in the Russian Ministry of Defense in the first half of July which discussed possible directions of Armed Forces development up to the year 2000. Taking part in its work along with Armed Forces leaders was O. Lobov, secretary of the Russian Federation Security Council, S. Yushenkov, chairman of the State Duma Defense Committee, and representatives of other state structures and scientific centers of the country.

Minister of Defense General of the Army P. Grachev chaired the conference. Colonel General V. Barynkin, chief of Main Directorate of Operations and deputy chief of the Armed Forces General Staff, gave the keynote briefing "Results of Armed Forces Organizational Development and Basic Directions of Further Organizational Development up to the Year 2000."

Participants of the scientific forum confirmed the firm intent of the Armed Forces leadership to overcome existing objective difficulties and complete Army and Navy reform in a timely manner. It was noted that today, when the second stage of reform has entered the concluding phase, the need has matured to determine optimum paths of Armed Forces development after 1995. It is common knowledge that we now have five branches of the Armed Forces—Strategic Missile Troops, Ground Troops, Air Defense Troops, Air Force and Navy. The Russian Federation Armed Forces structure is to be changed by the year 2000 to include the Strategic Missile Troops, Air Force, Ground Troops and Navy. After 2000 a move to a three-branch structure is possible: Aerospace Troops, Ground Troops and Navy.

It was emphasized at the conference that optimizing the Armed Forces structure will require improving the command and control system. A reduction in the Armed Forces and in their command and control entities will become the active phase of reorganization. General of the Army Grachev informed those present that it is proposed to implement the decision to reduce the Army to 1,917,000 persons by 1 October, and subsequently it will have 1.5 million persons. But this process must be accomplished smoothly to avoid negative consequences for combat readiness.

Naturally, in reforming the Armed Forces one also should consider the country's political situation and the situation which has formed on its borders. Plans include deploying military bases outside the Russian Federation, establishing the Kaliningrad Special Area, reforming the national air defense system and strengthening the role of military districts.

Conference results permit concluding that clear outlines of the Russian Armed Forces of the 21st century have been determined.

Military Food Service Achievements Noted

94UM0590E Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) p 15

[Letter by Colonel N. Chernovalov, chief of a directorate of Russian Federation Central Food Directorate: "Food Service Specialist Courses"]

[FBIS Translated Text] Courses were held in the city of Naro-Fominsk for food service chiefs of districts and fleets. Colonel General V. Churanov, chief of Russian Federation Armed Forces Rear Services, and Lieutenant General V. Savinov, chief of Russian Federation Ministry of Defense Central Food Directorate, summed up results and specified very important directions of food service activity at the present stage of Armed Forces reform. It was noted that the food service carried out its primary mission—the system of food support to troops is operating.

We are the ones who are almost the first in the Army to feel on ourselves all the "delights" of the transition period, when the support mechanism which operated for years is no longer effective and new market relations between consumers and suppliers are just getting started. Neither consumers nor suppliers had experience, appropriate training, or a firm legal base. It stands to reason that they did not avoid mistakes, failures and miscalculations. But even under such unstable conditions, they did not allow disruptions in food support to troops.

In the present stage of Armed Forces reform we are to improve the food support system even further and bring it into line with new economic conditions so that food of high quality arrives in the troops on time.

We are counting here not only on state assistance, but also on our own abilities. At the present time 100 agricultural enterprises, 34 special dairy farms, 5,446 military unit subsidiary farms, and 122 subsidiary farms of Ministry of Defense cost-accounting organizations and enterprises are working for the soldiers' mess. In 1993 the food products they produced permitted supplying the troops with meat for 2.1 months, potatoes and vegetables for 2 months, eggs for 4.1 months, and milk for one year.

Military sovkhozes sold products amounting to over R30 billion and received a profit of R14.1 billion. And the reserves still are far from exhausted in this important job.

The organization of military meals is to be rearranged. Use of semiprepared food of various dishes received from industry or made on site in a special shop for the entire garrison will become their basis. This will permit improving the sanitary condition of messhalls, improving food quality, and guaranteeing completeness in getting allowances to the personnel.

During the courses there was a businesslike exchange of opinions concerning an improvement in food service work.

COMBAT TRAINING

Preparing the Battalion and Company Defense

94UM0590F Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 18-23

[Continuation by A. Denisov and N. Shishkin of article begun in VOYENNYY VESTNIK, Nos 1, 2, 4, 5, 1994 and ARMEYSKIY SBORNIK, No 1, 1994: "Combat Operations of Ground Troops Subunits: Preparation of the Battalion (Company) Defense"]

[FBIS Translated Text] Preparation of the defense begins on receiving the combat mission from the senior commander. If there is sufficient time, all measures are carried out fully, otherwise in an abbreviated manner and in shorter time periods. Preparation of defense in the battalion is begun in advance back in peacetime, but it begins in the company in a situation of threat on the eve of war, when updated missions will be communicated to all commanders right down to the squad (tank).

Organization of the defense is rehearsed back in peacetime in tactical exercises and problems and in the command training system. A battalion or company may be moved into the actual defense area (strongpoint) during inspections, but subunits take up the defense in a threat situation on the eve of war.

Organization for battle is a most important measure in preparing the defense. The commander's actions depend on specific conditions of the transition to the defense, especially how far away the enemy is and how much time is available. Conditions can vary widely: in peacetime it may be prior to occupying the defense, in the transition to it on the eve of war, or with surprise initiation of military operations by the aggressor. During war it may be in the absence of contact or in direct contact with the enemy.

On receiving the combat mission the battalion commander gains a clear understanding of it, determines measures for preparing the subunits, performs a time calculation, and orients deputies on upcoming operations. Then he issues instructions to the chief of staff, estimates the situation and makes the decision, which he briefs to the brigade (regimental) commander and communicates to his deputies.

After this the battalion commander performs ground reconnaissance, updates the decision and combat missions, and determines the coordination procedure, the system of fire and the extent of engineer preparation of the area. As a rule, the battalion commander needs 4-5 hours to organize the defense.

Meanwhile, enormously more time may be used, since work usually is done with interruptions and pauses. Secondary questions take up much time along with the most important ones. The time periods for battalion commanders' participation in the senior commande s ground reconnaissance and in organizing coordination, and time expenditures for going from place to place and for working in subunits appear especially unjustified.

On receiving the signal to take up a defense in a threat period, the battalion commander updates the decision, briefs it to the brigade (regimental) commander, familiarizes his deputies and subunit commanders with it, instructs them on preparing the subunits for moving out and occupying the defense, and indicates the time and procedure for work on the terrain. Then on ground reconnaissance he updates the decision, issues the operation order, and organizes coordination and the system of fire as well as comprehensive support of battle and command and control. Subsequently he works in the subunits together with deputies and the staff and at the prescribed time briefs the brigade (regimental) commander on readiness for moving out to the designated area. At the appointed time subunits move out to this area and accomplish its engineer preparation.

On receiving the mission, the company commander gains a clear understanding of it, determines measures which must be taken immediately, performs a time calculation, orients deputies on upcoming operations, and instructs platoon commanders on preparing for performance of the combat mission and on the time and procedure for work on the terrain. After this he makes the decision, briefs it to the battalion commander, communicates it to his deputies and platoon commanders, and instructs them on organizing comprehensive support of battle and command and control. Then he decides questions similar to those which the battalion commander is working on. On the whole, 2.2-3 hours are spent organizing the company defense.

With an enemy's surprise initiation of combat operations, the battalion commander updates the decision made in peacetime or makes a new one, briefs it to the brigade (regimental) commander, familiarizes his deputies with it and assigns missions to subunits. He updates questions of coordination, support and command and control, and the system of fire. In case time is extremely limited, some questions can be resolved right while moving forward to the defense area.

The company commander's work of organizing for battle under these conditions will be approximately the very same, but he begins it by gaining a clear understanding of the mission received, inasmuch as combat missions usually are not communicated to companies in peacetime.

In shifting to a defense in direct contact with the enemy, the battalion (company) commander's actions differ somewhat from previous versions. On receiving the mission the battalion (company) commander first of all organizes capture of the designated line. After consolidating on it he makes the decision, briefs it to the senior commander, assigns missions to subunits, and organizes coordination and the system of fire, command and control, and protection against mass destruction and precision weapons. He gives instructions on the main questions of comprehensive support to battle and directs

engineer preparation of the defense area (strongpoint). Subsequently he performs ground reconnaissance, updates missions for subunits, the coordination procedure and other questions if necessary.

A different sequence also is possible. In case a warning order is received, the battalion (company) commander determines his concept of battle, briefs it to the senior commander, familiarizes deputies with it, and issues verbal warning orders and instructions on organizing coordination, comprehensive support to battle and command and control. On receiving the operation order he completes decisionmaking from the map and performs ground reconnaissance, deciding the very same questions as in previous versions of his work.

Decisionmaking is the most important moment. The decision is made based on gaining a clear understanding of the mission received, conclusions from the situation estimate and the tactical calculations performed.

In gaining a clear understanding of the mission the battalion (company) commander must understand the goal of upcoming operations, the senior commander's concept, the mission and place in the battle formation of the brigade or regiment (battalion), the role of the battalion (company) in battle, missions of adjacent subunits and the procedure for coordination with them, and the readiness time.

In studying the senior commander's concept, one should gain a clear understanding of the following: axes for concentrating main efforts; areas on whose holding the stability of the defense depends; methods of repelling an attack and destroying an enemy who has penetrated; and the system of defensive positions and areas.

In studying the battalion (company) mission, the commander gains a clear understanding of the following: what enemy must be repelled; axis for concentrating main efforts; density of antitank weapons, tanks and BMP's; number and trace of trenches prepared by battalion (company) personnel; what the reconnaissance is supposed to determine, where, and by what time; zones of fire and secondary sectors of fire of companies (platoons); fire concentration sectors; personnel and weapons to be assigned for securing flanks, boundaries and intervals; means of reinforcement and support, and where they are to arrive.

In gaining a clear understanding of the subunits' place in the battle formation of the brigade or regiment (battalion) and its role in battle, it is necessary to have a clear picture of the capacity in which it is supposed to operate and on what axis (axis for concentration of main efforts or another axis), in what manner its position will change in the course of battle and, based on this, how its actions will affect achievement of success.

In gaining a clear understanding of the missions of adjacent subunits and methods of coordination with them, the battalion (company) commander familiarizes himself with the content of their combat missions; with axes for concentrating main efforts and terrain areas on whose holding stability of the defense depends; with the disposition of strongpoints; with the overlap in zones of fire; and with the sequence of destroying an enemy who has penetrated in the gaps.

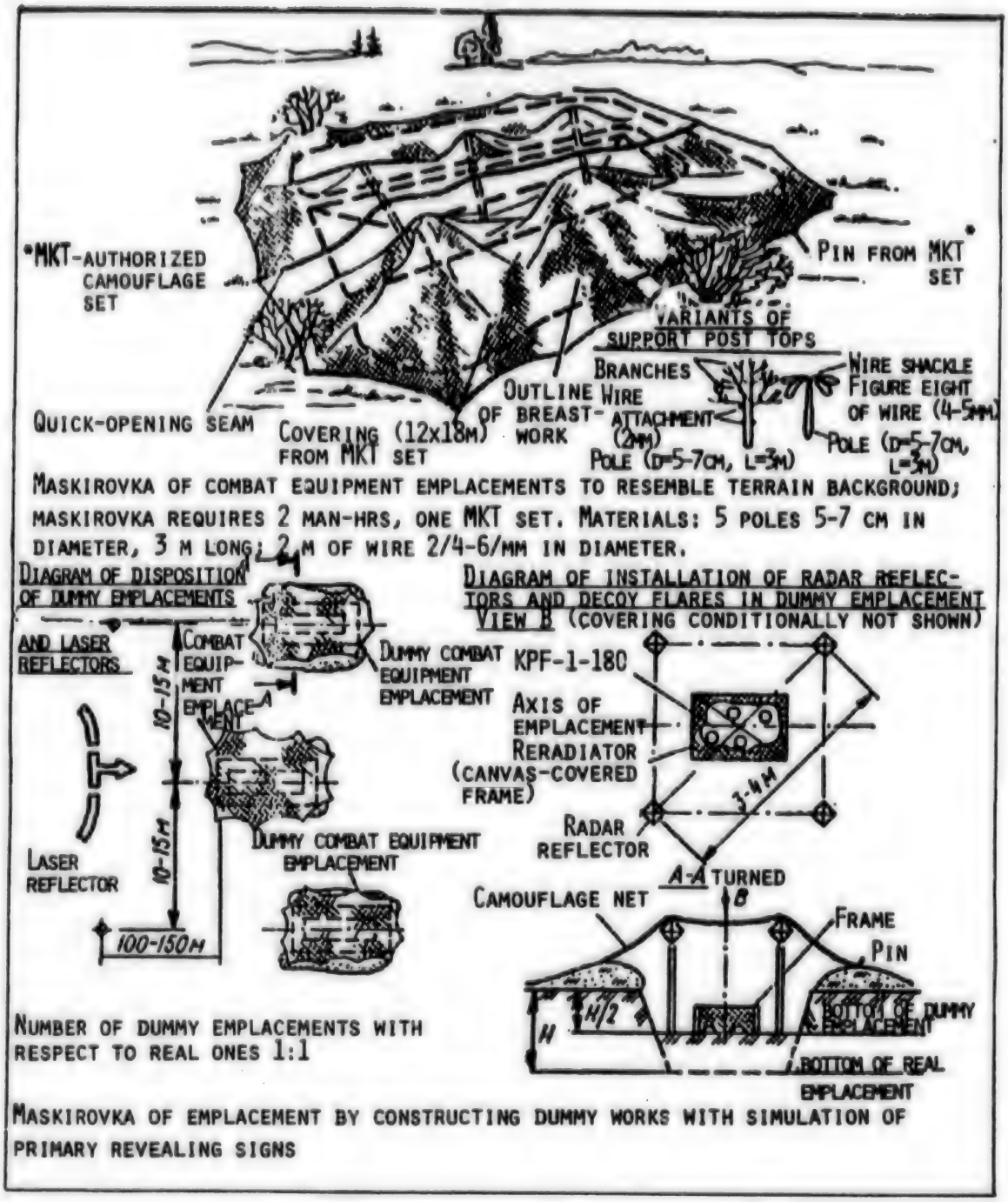
In gaining a clear understanding of the readiness time for performing the mission, the commander must understand how much time the battalion (company) has and, based on this, determine what kind of measures it will be necessary to take and when for preparing the battalion (company) defense and in what time periods to organize for battle.

Measures which demand urgent conduct can be divided into two groups: those connected with preparation for performing the combat mission (preparing equipment and personnel, replenishing supplies, evacuating the wounded and sick and so on), and those conducted by the commander, his deputies and the staff for making the decision and planning the battle (organizing reconnaissance, preparing calculations and determining the time and procedure for work on the terrain, time periods for completing work of organizing for battle and so on).

The commander makes the time calculation personally. The following serve as initial data: time the mission was received and battalion (company) readiness time; time for briefing the decision (commander's concept) to the senior commander; time periods for participating in measures to be taken by the senior commander to organize for battle on the terrain (or a terrain model); time of occupying the defense and readiness time of the system of fire and engineer obstacles; sequence and time periods for performing work of maskirovka [lit. "camouflage", however, includes "concealment" and "deception"—FBIS] and engineer preparation of the defense area (strongpoint); time of sunrise and sunset (duration of hours of daylight and darkness).

After calculating time and issuing instructions, the battalion (company) commander begins estimating the situation. In the enemy estimate the following is studied and determined in succession: makeup, position and degree of protection of the enemy attacking in the defense sector of the brigade or regiment (battalion); makeup of forces which may attack in the battalion (company) defense frontage, likely axes for concentration of main efforts and density of enemy personnel and weapons throughout the zone of advance and on the axis for concentration of main efforts; possible locations of nuclear attack weapons, artillery, command and control facilities, and deployment lines; time for launching the assault; strong and weak aspects of the enemy and likely nature of his operations.

In the estimate of friendly subunits, their makeup, position, status, capabilities, degree of protection and degree of support are clarified, and particularly their strength level; degree of radioactive irradiation of servicemen; morale, fighting efficiency and mental state of the people; personal



Maskirovka and construction of dummy objects

qualities and experience of the commander; and serviceability of weapons and equipment.

In estimating the subunits' state of supply the commander determines the presence of supplies, time periods for establishing reserves, ammunition and fuel expenditure rates and the procedure for their delivery, and he assigns missions for technical and medical support.

Combat capabilities of the following subunits should be estimated especially thoroughly and realistically: artillery—for engaging the enemy from indirect firing positions and by direct fire; motorized rifle and tank companies (platoons)—for combating tanks, IFV's and APC's; air defense personnel—for destroying airborne targets. It is also necessary to determine the capabilities of all subunits for engineer preparation of positions.

Based on the estimate of friendly subunits (with consideration of the enemy estimate), the battle formation is established, personnel and weapons are distributed, and the following are determined: combat missions, system of fire, sequence of work, readiness time of positions from the standpoint of their engineer preparation, amounts of supplies and time periods for replenishing them, and principal measures for comprehensive support to battle.

In estimating adjacent subunits the battalion (company) commander studies information on subunits operating on the flanks and ahead of the battalion (company) frontage and also information on the second echelon (reserve) of the brigade or regiment (battalion); and he determines conditions for coordinating with them. As a result, the degree of their influence on performance of the battalion (company) mission is established, measures are determined for securing flanks, boundaries and intervals, and options are outlined for passing subunits operating in front through battle formations of the battalion (company) during a withdrawal.

In estimating the terrain, initially establish its general nature, i.e., type of relief, local features, hydrography, ruggedness, capability of being observed, protective and concealing features, status of roads and off-road trafficability. Then determine possible changes after delivery of nuclear strikes and destruction of enterprises of the atomic and chemical industry and water engineering structures.

In estimating terrain on approaches to the defense, determine sectors which permit the enemy to concentrate covertly, presumed routes of his forward movement, avenues of probable tank approach, the line of deployment, final coordination line, and possible places for deployment of nuclear attack weapons, artillery, command and control facilities and other important installations.

In studying terrain in the defense area (strongpoint), the commander determines and clarifies the trace of the forward edge, direction for concentrating main efforts, terrain areas on whose holding stability of the defense depends, sector or sectors of possible enemy penetration, concealing features of terrain, presence of natural cover for concealed disposition of the battle formation and for executing a maneuver, and conditions for fortification.

With consideration of this and of the battle formation alignment, plan the strongpoints; the number and trace of trenches and communication trenches; firing positions of artillery and of the grenade launcher, antitank, air defense and other subunits; locations for setting up fire ambushes and cover for the armored group (if established); deployment lines of the antitank platoon (squad); and lines of firing positions for tank and BMP-equipped motorized rifle subunits located in the second echelon (reserve), and for the armored group. Determine axes and lines of deployment for counterattacks; disposition of command and control facilities and of technical support and rear services subunits; supply, evacuation and maneuver routes and places for constructing engineer obstacles; nature and procedure of engineer preparation of the defense area (strongpoint); and dummy strongpoints, trenches and positions.

The NBC situation estimate is made to forecast possible personnel losses when on contaminated terrain and to choose measures permitting a reduction in the casualty and damage effect of radioactive substances, chemical agents and biological agents. It is made based on results of radiation and chemical observation (reconnaissance, monitoring) organized personally by the battalion (company) commander.

Having gained a clear understanding of the mission, estimated the situation and compared results of tactical calculations, the battalion (company) commander makes the decision and formalizes it on the working map. The basis of the decision is the commander's concept, in which he specifies the axis for concentration of main efforts, terrain areas on whose holding stability of the defense depends, methods of repelling an attack and destroying an enemy who has penetrated, the battle formation, and the system of strongpoints and firing positions.

The senior commander indicates the axis for concentration of main efforts. Most often it will be on the most accessible terrain permitting the enemy to make use of tanks and other armored vehicles. At the same time, the probability of deceptive actions on the enemy's part and delivery of strong attacks on less accessible terrain as well also cannot be discounted.

In determining areas on whose holding stability of the defense depends, proceed from the advisability of reliable cover of axes where the enemy is capable of delivering the heaviest strikes. As shown by the experience of wars and armed conflicts, attackers above all attempt to take commanding heights, road junctions, groves, built-up areas and other tactically important objectives.

With the help of a skillfully aligned defense, it is possible to deceive the enemy and make him vulnerable. This is achieved by careful maskirovka of the battle formation, creating camouflaged fire sacks, preparing dummy points and trenches, and employing ambushes and roving guns, tanks and BMP's.

Coordination is organized by missions, probable axes of enemy attack and options of friendly subunit operations. Employment of subunits is envisaged for the following missions: engaging the enemy during forward movement to the FEBA, during deployment and when he launches the assault (in the attack position), in repelling an assault ahead of the FEBA, and when he penetrates the defense area (strongpoint).

In organizing command and control the battalion (company) commander establishes the location of the command-observation post, time of its deployment, and methods of using communications equipment before the beginning of and during battle.

Ground reconnaissance usually is conducted after returning from ground reconnaissance conducted by the senior commander. As a rule it is most effective if, knowing their missions and having made a decision, subordinates independently study the terrain before the battalion (company) commander's arrival. Initially general ground reconnaissance is conducted (together with all participants), then it is conducted in each strongpoint with appropriate appointed persons.

(To be continued)

Problems of Support to a Tactical Airborne Assault Force

94UM0590G Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 24-26

[Article by Colonel V. Uryupin: "Motorized Riflemen in a Tactical Airborne Assault"]

[FBIS Translated Text] The most acute contradiction in development of military art at the modern stage probably is that the sharply increased fire capabilities of offensive troops (enormous destructive force, almost unlimited range, exceptional speed) do not conform to their maneuver capabilities, i.e., to the ability to take advantage of results of strikes against the enemy. This also is noted by U.S. military specialists, who believe that, compared with the World War II period, the firepower of ground troops has grown tens and hundreds of times, while mobility has increased only by 10-12 percent.

One way to resolve this contradiction is to comprehensively increase the mobility of combined arms units. Therefore the active use of helicopters for landing tactical airborne assault forces assumes ever greater importance in the offensive.

The timely landing of an assault force and bold, decisive actions ensure a rapid transfer of efforts into the depth of the defense, conduct of the offensive at a fast pace, delivery of simultaneous strikes on the enemy from the front, flanks and rear, and his breakup and defeat in detail.

The experience of combat training of previous years shows that the makeup of a tactical airborne assault force was determined with consideration of the need for creating a favorable force ratio. For example, it was 2:1 for capturing or destroying objectives and it was 1:1 or 1:2, and often even with a more significant enemy superiority, for holding an important area or line.

The most typical exercise makeup of a tactical airborne assault force in the offensive consisted of reinforced motorized rifle battalions or companies. A battery (platoon) of antitank guided missiles, a combat engineer platoon or squad and a radiation and chemical reconnaissance squad would be attached to them as a rule. In addition, its makeup included teams for adjusting artillery fire and vectoring aircraft.

The nature of combat missions being performed by airborne assault forces in the enemy rear demands nonstandard, nonstereotyped actions and primarily surprise, daring actions. Inclusion of flamethrower subunits in the tactical airborne assault force contributes to this to a considerable extent, especially in capturing and destroying command and control facilities, communications centers, elements of precision weapon systems, and weapons of mass destruction at launch positions and in the deployment area; in fighting to capture fortified objectives; and in ambush operations. Based on troop experience, it is advisable to attach a flamethrower platoon to motorized rifle battalions and a flamethrower squad to motorized rifle companies.

The Ground Troops Field Manual specifies that a battalion (company) is landed by a single sortie of a helicopter unit or subunit. The depth of the landing may be up to 20-30 km from the front line for a battalion and up to 10 km for a company. But combat training experience shows that a reinforced motorized rifle battalion needs a minimum of 40 Mi-8 helicopters and a reinforced motorized rifle company 16. Meanwhile, the continuing reorganization of the Ground Troops and the change in organizational structure of combined arms formations and large strategic formations pose a large number of problems in employing tactical airborne assault forces.

The following can be included among the main problems: disbanding of organic helicopter subunits in formations, limited artillery capabilities in range of fire (which precludes fire support to the battle of the tactical airborne assault force), poor maneuver capabilities of the assault force after landing, difficulties in coordination, comprehensive support and command and control of the tactical airborne assault force, and the duration of helicopter transit in the designated (indicated) en route corridor.

Just what are the ways to resolve them? Without laying claim to truth in the final instance, I will set forth my own personal viewpoint.

In my view, the procedure for employing a tactical airborne assault force in a formation's offensive should be determined by the commander of the large strategic formation in a centralized manner under a unified concept and in a unified system of employing the air echelon, although in the course of an offensive a formation commander may employ a tactical airborne assault force independently in the presence of the necessary number of helicopters, especially during battle in the depth of the enemy defense and for performing missions that arise suddenly.

In making the decision to conduct an offensive operation, the large strategic formation commander should determine whether to have the tactical assault force as an element of the operational alignment or as an element of the battle formation. With consideration of this, the large strategic formation staff acts as the organizer of employment of the tactical airborne assault force in the first instance and the formation commander in the second instance. The formations from which tactical airborne assault forces will be employed as well as the personnel and weapons to be brought in for supporting the landing and battle are assigned when the assault force is an element of the battle formation.

Such an approach will permit solving problems of assigning a detail of aviation and fire support to the battle of the assault force in combat mission areas. In this case the depth of a landing can reach maximum limits. Thus, in exercises an assault force consisting of a reinforced motorized rifle battalion was landed to a depth up to 40 km.

But if the assault force is being employed by decision of the formation commander, the depth of the landing should be established depending on the missions he is performing and on the time of independent operations. Thus, combat training experience shows that the depth of the landing is up to 12 km when penetrating a deliberate enemy defense with a rate of advance of 2-3 km/hr and up to 20 km in a battle to take positions of division reserves with a rate of advance of 4-5 km/hr. This ensures artillery fire support of the assault force's battle and swift movement to it of forward (raiding, enveloping) detachments, and enables a reinforced motorized rifle battalion to conduct independent combat operations for 4-6 hours.

In those cases where an assault force is employed without combat vehicles, it is possible to solve the problem of its battlefield maneuverability in two ways: land the assault force near or immediately on the objective; after the assigned mission has been performed, execute a maneuver to another axis by air. Meanwhile, the experience of motorized rifle subunits participating in a tactical airborne assault with lightweight means of transportation (UAZ-469) and weapons (Vasilek and Podnos mortars), which considerably increases their maneuverability, deserves attention.

Organization of coordination, command and control and comprehensive support is the most important problem in employing a tactical airborne assault force.

Thus, in addition to the usual questions to be resolved in the offensive, in organizing coordination it is necessary to clarify the procedure for concentrating assault force subunits and helicopters in the assault airlift staging area; time periods for loading weapons, combat vehicles and supplies and for boarding of helicopters by personnel; objectives, time and sequence for delivering nuclear strikes and for neutralizing the enemy by conventional fire in support of the landing and battle; beginning of takeoff, time of crossing the front line, altitude and duration of the flight, time of the landing, and return route of helicopters; time for cessation and renewal of artillery fire in the en route corridor; procedure for fire support to the assault force after the landing; linkup point of the assault force with a forward detachment of first echelon units, methods of their joint operations and of maintaining communications; mutual recognition, warning and control signals. Questions of supporting the flight of helicopters with the assault force to the landing area, the landing, and support to the assault force battle are rehearsed in greatest detail.

It appears advisable to exercise command and control of the tactical airborne assault force in a centralized manner by radio. Establishing tactical command and control teams is most acceptable for improving its effectiveness; they analyze data of the situation which has taken shape in the assault force combat operations area, prepare necessary data for updating missions or assigning new missions and questions of coordination, and ensure their timely communication to those responsible for execution.

An artillery officer must adjust artillery fire over a separate radio net, since exercise experience shows that in the landing of a tactical airborne assault force, 4-6 artillery battalions are required just for neutralizing enemy air defense weapons during penetration of his forward defensive line. A forward air controller with communications equipment ensuring his direct contact with the aircraft and helicopters must be accommodated at the assault force commander's command-observation post for vectoring aircraft in the course of air support to the assault force's battle.

The requirement for constant logistic support of the assault force, evacuation of wounded and dead, and support of the assault force flight with the subsequent return to the friendly troop disposition poses the problem of constant support to the en route corridor. Therefore aircraft must be employed to neutralize enemy air defense weapons beyond the reach of artillery. According to exercise experience, neutralizing ground air

defense weapons in the en route corridor requires using an average of 1-2 fighter-bomber squadrons and a combat helicopter squadron, which is not always possible. Meanwhile, the effectiveness of aircraft will be increased by establishing composite aircraft-helicopter elements, using guided and homing munitions, and having ground troops mark targets. Thus it is obviously possible to support the en route corridor for a lengthy time only on condition of having a unified system for planning the employment of airborne assault forces.

The article has examined only some of the main issues in employing tactical airborne assault forces. Its limited scope did not permit the author to set forth his view in greater detail on existing problems, particularly engineer, logistic and technical support, tactical maskirovka [lit. "camouflage", however, includes "concealment" and "deception"—FBIS], and a number of other questions. I believe it is necessary to return to this topic. It appears that a discussion by specialists will produce a positive result.

Organizing Terrain in a Desert Defense

94UM0590H Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 27-31

[Article by Colonel V. Shamshurov, candidate of military sciences, docent; Colonel I. Nikolayev, candidate of military sciences; and Colonel V. Sumin, candidate of military sciences: "Organizing Terrain in a Defense in Desert Areas"]

[FBIS Translated Text] The experience of local wars and conflicts as well as of field training exercises shows that a defense in desert areas is organized along separate axes with the establishment of troop groupings capable of performing assigned missions independently. A battalion defense area and company strongpoints are prepared for a perimeter defense and are carefully camouflaged. Built-up areas, water sources, road (caravan route) junctions and oases are the principal objects of the defense.

The presence of terrain sectors with barkhans, dunes and wet salt flats that are difficult to negotiate permits building a defense on a broader frontage and having larger intervals between strongpoints than under ordinary conditions (Fig. 1).

The specifics of a desert area leave their imprint on its engineer preparation. This especially concerns fortification of positions and performance of engineer maskirovka [lit. "camouflage", however, includes "concealment" and "deception"—FBIS] measures. In particular, the almost total absence of vegetation, the specific nature of soils and the harmful effect of sand dust on operation of engineer equipment greatly influence fortification of the battalion defense area.

On a summer day (under conditions of sultry heat and dust in the air) it is possible to have frequent failures and malfunctions of various instruments and assemblies, including fuel and air filters, and overheating and increased wear of engines, running gear and work implements of engineer equipment, which leads to its decreased productivity (by 20-25 percent, based on troop experience).

It also should be borne in mind that a good field of view using visual equipment (binoculars, reconnaissance theodolites, periscopes, aiming circles and so on) permits the enemy to scan the terrain and evaluate the nature of missions being performed by troops at a distance of 8-10 km. Therefore engineer vehicles can be used only in the depth of the defense when in direct contact with the enemy.

Depending on the kind of soils, fortification structures are made completely buried (in sands, loams, loess) or semiburied (in hard and rocky ground). The absence of timber presumes wide use of factory-made structures, sandbags, canvas, polyethylene films, metallic mesh (gabions), LKS-2 fabric-on-frame structures, FVS corrugated steel elements, KVS-U [corrugated steel shelter] sets and so on, as well as local materials (rock, saxaul, reeds, rushes and other brushy vegetation). Using local construction materials as well as sandbags considerably lowers the cost of building fortification structures and reduces labor expenditures.

For example, the labor-intensiveness of building a shelter from a USB [not further expanded] set is 120 man-hours and 15 machine-hours, but making one from sandbags takes 90 man-hours and 1.5 machine-hours. Delivering USB sets to the site requires 12 MAZ-550 vehicles. At the same time, 7,500 sandbags are carried on one ZIL-131, which is enough for building three shelters.

Under present conditions it is very important to set up special overhead screens above combat equipment emplacements and shelters, which is dictated by the need for protection against modern precision weapons. The experience of Persian Gulf combat operations showed that an absence of such screens led to mass losses of armored and other equipment of the Iraqi troops.

The need for upgrading field fortifications (emplacements, shelters) to provide protection against weapons and reduce their construction time to the maximum is obvious. Field training exercise experience indicates that emplacements in which overhead screens have been prepared from improvised materials are very cumbersome, difficult to construct and ineffective. But that task is made even more difficult under desert terrain conditions because of the absence of vegetation (timber). Therefore overhead covers must be made of light, strong materials capable of changing the radar and thermal signature of armored vehicles and reducing the damage-producing properties of modern ammunition.

In particular, it is possible to recommend the method of making polyurethane foam screens using soil forms. It requires no great material inputs or specially trained

Fig. 1. Battalion defense area in the desert

personnel. Its essence is as follows. A soil or sand form is piled on the surface of the ground near emplacements (shelters) and covered on top by a polyethylene film. Then a layer of polymer material is applied to this lining. After it hardens, four persons install the finished screen over the emplacement (the weight of a 5.0x3.5 m screen is approximately 150 kg). Fig. 2 shows the sequence of making screens using a soil form.

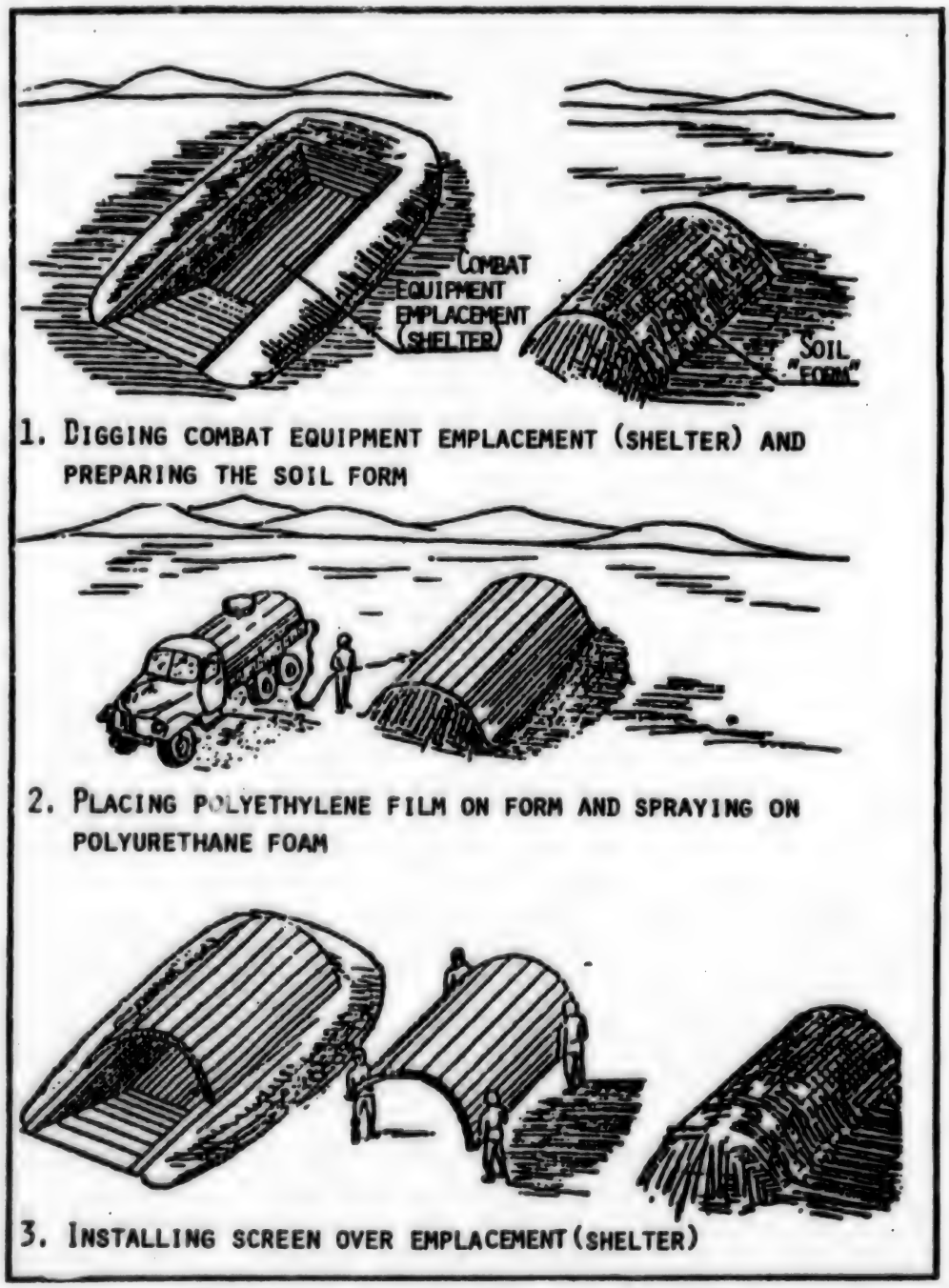


Fig. 2. Making polyurethane foam screens using soil forms

To improve protective features of open fortifications, it is also possible to arrange very simple overhead cover above them using a tent, canvas or other material (Fig. 3), stretching it tightly over the shelter and applying 10-15 cm of soil (sand). The tent is fastened to the ground with pegs along the edges.

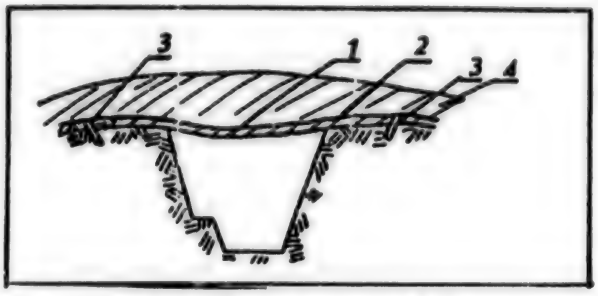


Fig. 3. Slit trench with rope-and-fabric cover

Key:
1. Rope
2. Canvas (tent)
3. Pegs
4. Soil and entire poured layer

It is possible to cover trenches and slit trenches using boxes of rocks (gabions), sandbags, and automobile tires (Fig. 4).

In emplacements, slit trenches and trench sectors being dug in the sand it is necessary to reinforce the faces (not allow scarps of open fortification structures to collapse). Local materials (rock, saxaul and so on) and elements of factory-made structures (metal panels, corrugated metal sheets and so on) are used for this.

Protecting fortification structures from drifting sand or from being laid bare because of heavy winds remains a serious problem under conditions of sandy deserts. A possible option for solving it can be to use the Nerozin preparation used in the national economy, for example, to protect supports of electric power lines and oil and gas lines in deserts. The technology of its application is simple. It is sprayed on terrain where there are weapon emplacements and other fortification structures and it acts as a binder. The applied layer is approximately 4-5 mm thick, which is fully sufficient for sand particles to remain in place even in high winds.

When defending on a wide frontage it is advisable to bring weapon emplacements and protective works closer together on the terrain, which permits creating strong centers of resistance adapted for a fight in total encirclement, rapidly occupying firing positions, and sheltering personnel.

The open (level) nature of terrain and absence of forest tracts in the desert dictate the need for concealing troops and objects. Natural concealing properties of terrain as well as artificial screens of various materials and camouflage painting of parts of structures protruding above the earth's surface are used above all to reduce conspicuousness of fortifications, obstacles and other elements of a fortified position.

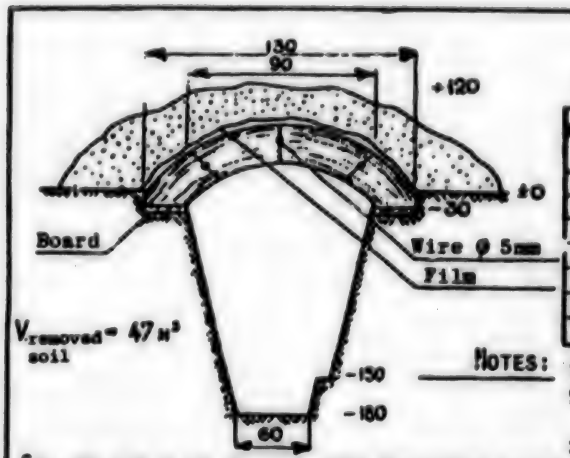
Along with concealing actual objects, demonstrating dummy objects is of great importance. The simulation of a dummy forward edge as well as of artillery positions and tank concentration areas often was used during the Great Patriotic War, for example. Methods of making such structures vary widely, but in all cases they must be verisimilar both in external appearance as well as location. Enemy reconnaissance capabilities should be taken into account without fail.

Iraqi Army experience of preparing dummy (reserve) positions and defense areas during the Persian Gulf conflict is instructive. Thus, in the period of preparing the defense up to 700 firing positions were prepared for field artillery and up to 750 firing positions for AAA (200 and 250 respectively ended up being occupied, i.e., there were up to three dummy positions for each real position). Entire systems of reserve and dummy trenches, shelters and positions also were made in motorized infantry and tank subunit strongpoints, which sharply increased troop capabilities for improving survivability. For greater credibility, combat operation of radars in an emitting mode was simulated at dummy air defense positions. According to foreign press reports, by the end of the first week of combat operations allied aircraft had delivered up to 90 percent of air strikes against dummy targets.

To create dummy targets in the Persian Gulf, the Iraqi Army used in particular fiberglass mockups coated with metallized paint and supplied with heat emitters, and inflatable mockups having radar and thermal revealing signs analogous to real equipment models. The use of such means permitted diverting a considerable portion of multinational forces aircraft from delivering strikes against real targets, which forced the multinational forces command to set up special training for flight personnel in the ability to distinguish mockups from actual equipment.

It also should be borne in mind that a great deal of dust is raised during troop movement in the deserts. This clearly is a revealing sign, but at the same time dust permits simulating the movement and disposition of troops of considerable strength using small forces, thereby deceiving the enemy.

The extent of engineer maskirovka measures on desert terrain increases by approximately 2-3 times compared with ordinary conditions. Therefore searching for means and methods of reducing the labor-intensiveness and time periods for performing this mission (as well as fortification of positions, by the way) is an insistent need. Timely, quality performance of primary missions of engineer preparation such as fortification of terrain and performance of engineer maskirovka measures will play an important role in improving troop survivability in defensive battle.

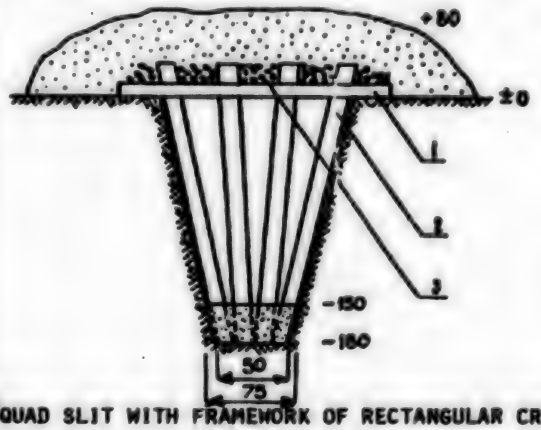


CHARACTERISTICS OF DOMESTIC TIRES

№	Vehicle Makes	Sizes, cm: Outer Diameter	Inner Diameter	Width
1	ZIL-130	102	60	26
2	ZIL-131	114	50	33
3	MAZ-503	112	40	31
4	KAMAZ-520	103	51	26
5	Ural-375	127	80	39
6	KrAZ-255	130	95	52
7	Road Const Veh.	149 - 312	61 - 83	45 - 64

NOTES:
1. *Tires Nos 5 and 6 are most suitable*
2. *One slit trench holding up to 15 persons & 9 m long requires 11 No 5, 9 No 6 tires*
3. *Making slit trench requires 36 man-hrs*

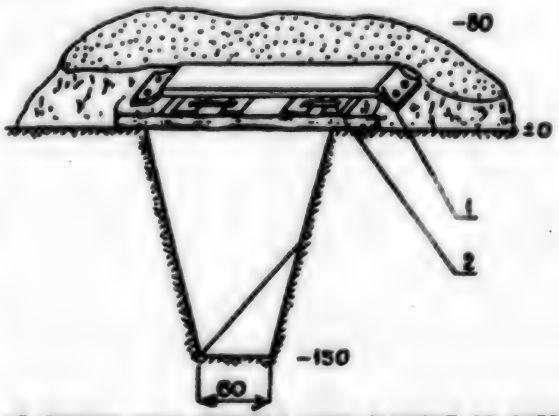
CUL-DE-SAC SLIT TRENCH WITH OVERHEAD COVER OF WRITTEN-OFF TIRES



1-POLES φ 10 cm, ℓ = 2,5 m – 30
2-POLES φ 10 cm, ℓ = 2,2 m – 14
3-BRUSHWOOD, STRAW, BRANCHES FOR OVERHEAD COVER--2 m²

MAKING THE SLIT TRENCH REQUIRES 18-20 MAN-HRS

SQUAD SLIT WITH FRAMEWORK OF RECTANGULAR CROSS-SECTION WITH DISCONTINUOUS REVETMENT AND OVERHEAD COVER



1. FABRIC (FELT);
2. REMOVABLE ELEMENTS OF BODY.

MAKING THE SLIT TRENCH REQUIRES 15-18 MAN-HRS
REMOVING THE OVERHEAD COVER REQUIRES 1.5-2 MAN-HRS

SLIT TRENCH WITH VEHICLE BODY ELEMENT AS OVERHEAD COVER

Fig. 4. Slit trenches with overhead cover of improvised materials

Pilot Information Traps

94UM0590I Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 34-35

[Article by Colonel V. Kozlov]

[FBIS Translated Text] ...Although the sky was covered with clouds, visibility remained good and the pilot flew his combat aircraft over the rugged terrain while conducting visual observation. As expected, the underlying surface changed after some time and the flight now continued over the desert. Nothing presaged trouble, but suddenly the aircraft collided with the ground.

...In a training flight the pair was rehearsing an attack on a naval target from a dive. The two aircraft already were approaching the target swiftly. The leader abruptly pulled his aircraft up, but the wingman was unable to execute this maneuver because of a lack of altitude and collided with the water surface...

...The flight mission was to attack an airborne target. The pilot prepared for it carefully. Weather conditions were good. Some time after takeoff the pilot brought the aircraft to the target area within range of its visual acquisition. But where was the target? The pilot did not see it, and suddenly it appeared in the field of view at a very close distance. The attack was broken off.

Three examples from the flying practice of military pilots. What is common to them? An analysis of each one reveals one important feature: in all three cases the pilots ended up in so-called information traps, where the information they were receiving proved to be inaccurate or incomplete because of certain psychophysiological patterns.

Just what are information traps?

A flight at extremely low altitude with good visibility (first example) usually is made visually. Reference points outside the cockpit serve as primary information sources here. Objects on the ground are of special importance: their size and rate of displacement are the main signals to the pilot in determining speed and especially flight altitude. The absence of ground objects or their small number, as a rule during flights over a smooth water surface, snow-covered surface, and desert, considerably diminish the accuracy of visual determination of altitude and in some cases also of speed. But the pilot continues to try to determine altitude by eye and makes serious and sometimes even tragic mistakes. For example, in estimating altitude over a snow-covered surface the mistakes reached 50 or more percent of its initial value.

Defects in organizing and controlling flight operations and violations or lack of discipline on the part of flight personnel are discovered in investigating such incidents. Therefore preventive measures are aimed at preventing such violations. But as is evident from the examples cited above, air mishaps based on a contradiction between conditions of visibility in flight and eye capabilities in estimating altitude over a smooth water surface, snow-covered surface or desert require those preventive measures which would take into account specifically this psychophysiological feature of a pilot's perception. Preventing such instances consists of informing flight personnel of the psychophysiological pattern noted, the pilots's periodic monitoring of the radioaltimeter, optimum distribution of crew functions (in a multiplace aircraft), correct determination of dangerous altitude values and reaction to an instrument's signals.

One pattern was manifested in the second example which is inherent to all wingmen—in a combat formation the wingman flies on the leader. In this case he has no need to shift his gaze from the leader to accomplish visual monitoring and read individual flight instruments, after that again fix his gaze on the aircraft flying in front, and so on. But this method of flying is indirect and reliable only when the leader makes no errors in controlling the aircraft. Otherwise these errors are raised to the second power for the wingman, and for him the situation instantaneously becomes dangerous and sometimes even an emergency. Consequently, in the case where the leader makes errors in maintaining flight parameters, the wingman finds himself in an information trap when flying on the aircraft in front, since he does not know the true value of a particular parameter (in the case in question, altitude).

Considering that flying on the lead aircraft is an objective pattern in mental regulation of flight activity inherent to an experienced wingman, it is impossible to prevent such air mishaps by bans or other administrative measures of influence. Their prevention must be built on a thorough understanding of the described features both by the wingman himself as well as by the leader, on the leader's understanding and awareness of his high responsibility for the wingman's flight safety, and the wingman's timely determination of maximum permissible values of specific flight parameters and his periodic monitoring of them from instruments in the most difficult and dangerous stages.

One well-known phenomenon of the visual analyzer's work called, "empty field myopia," is manifested in a space without reference points (third example). Its essence is that in the absence of any objects in the external medium, a person's gaze focuses on what is the optimum distance for him—1.5 m. Therefore, when a pilot searches for an airborne target in a space without reference points (even clouds being absent), his gaze, shifting in various directions, perceives information only at the indicated distance. This is one more information trap for a pilot.

Previously it was believed that empty field myopia was characteristic only of high-altitude flights, but studies of recent years have shown that this phenomenon also is manifested at medium and even low altitudes if there are

no objects in the pilot's field of view outside the cockpit. It is possible to prevent it at high altitudes by shifting the gaze to a collimator indicator, and at medium and low altitudes by fixing on ground objects.

Military pilots encounter a large number of information traps in their day-to-day activity. Let us examine a few more.

Level flight illusion. It arises when executing a 360 degree banked turn in the clouds. It is based on the predominance of information from mechanoreceptors in the pilot's perception caused by the effect of g-forces and coincides in direction with the effect of gravitational force, while visual information is perceived sharply for specific reasons. Preventing such information traps is based chiefly on knowing their psychophysiological nature and having faith in instruments.

Illusion of finding the target. It is manifested in the fact that a pilot takes another target or some element of terrain relief as the real target and employs weapons against them. The psychological essence of this phenomenon is that, with a very pronounced desire to detect and destroy a target, the pilot (as, by the way, also a professional in other areas) is ready to take what is desired as real. As we know, this phenomenon is often encountered in day-to-day life. Preventing the phenomenon must be built on knowing its psychological essence and, in perceiving any object, on the ability to single out those signs which identify the desired object.

We have listed features only of a few pilot information traps. Taking them into account in daily flying practice means improving flight safety.

Sanitary-Epidemiologic Lessons Learned in Afghanistan

94UM0590J Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 36-39

[Article by Colonel of Medical Service I. Konyshev, chief of Sanitary and Hygiene Department of Russian Federation Ministry of Defense Center for Sanitary and Epidemiologic Supervision, and Lieutenant Colonel A. Grib: "Experience Which Teaches Nothing"]

[FBIS Translated Text] In late March the fragile quiet of the Tajik-Afghan border was blasted by the cannonade of battle, but this time practice battle. Subunits of 201st Motorized Rifle Division distinguished themselves in the exercise. The result of the exercise indicates a great deal to those familiar with our troops' problems in that hot, shooting region from more than hearsay. Above all, that substantial changes for the better occurred there in the past year and that the high level of troop combat readiness and field proficiency now has been fortified, one would like to believe, with a firm foundation of comprehensive logistic support. And can it be otherwise?

This is far from a rhetorical question. By the way, it is not necessary to go far for the answer.

...A year ago 201st Division units and subunits were just mastering the unaccustomed mission of border defense. They were in a hurry. Subunits were brought up to the prescribed strength level and settled in at outposts on an urgent basis, entering that very everyday combat activity in which battle and everyday life are inseparable. But it seems they forgot this fundamental dependence for the umpteenth time. They did not create appropriate conditions for accommodating officers and men and they showed no concern for the proper sanitary condition of stationary messhalls and field mess facilities or about decontaminating water.

People began to fall ill. Things went from bad to worse. As a result, too many officers, warrant officers, first-term enlisted men and contract personnel ended up then not in formation, but in hospital beds. The people literally were mowed down by viral hepatitis, intestinal infections and malaria. In some cases wards were filled with squads, teams and crews almost at full strength. What kind of combat training was this? Judging from everything, the logistic support system here at first ended up in the "second echelon" in development of the operation to cover the border. As a result there were mass personnel illnesses.

It appears this has become a bad tradition for us. Open just the epidemiology section in the multiple volume "Opyt sovetskoy meditsiny v Velikoy Otechestvennoy voyne" [Experience of Soviet Medicine in the Great Patriotic War] and you will read about all those same shortcomings which later accompanied an emergency concentration of our troops in a particular region right down to today. There also was experience that was fresher and regionally closer to 201st Division—the Afghan experience. Had our memory not proven to be so short, many logistic support mistakes would have been avoided successfully. But what happened? Tajikistan and Afghanistan are a similar picture. When they drew up the sanitary and epidemiologic description of the territory of Afghanistan before troops were introduced there, they informed about everything, and in addition that our scourge would become viral hepatitis, amoebic dysentery, typhoid, overheating and heat strokes. Then, too, they introduced the troops hastily—faster, faster, we will think about rear services later, they said. Truly heroic efforts and many personnel and assets were required, with consideration of the specifics of Afghanistan, to establish a system of comprehensive logistic support, which is like a foundation in sustaining both battle and everyday life. It is impossible to count how many bumps and bruises we got, but it would be worthwhile remembering the lessons. Here are just a few.

Like 201st Division, troops in Afghanistan also frequently were disposed in small garrisons and outposts. They had to be settled in and supplied. For this depots with stockpiles were deployed (it is a pity that it was not done earlier on our own territory) and their optimum echelonment was achieved in order to deliver what was needed promptly without allowing subunit rear services to become "distended" and constraining their mobility.

Three meals a day were organized for the people, as authorized, and a hot meal and tea were prepared morning and evening and a dry ration during the day during mountain operations if the situation permitted. Food often had to be air-dropped, and so in time we learned to make a special container capable of withstanding the landing and we adapted ourselves to storing food products at outposts in cellars dug for this purpose.

There also was an acute water problem. High bacteriological contamination of sources led to numerous illnesses and forced us to take special precautionary measures. We began to issue people only boiled water and to decontaminate it with a pantocide. Subunit ration distribution points had special kitchens for this, and they had wells for storing water. In garrisons we set up pumping stations with chlorination units and wells for water storage, as well as special reservoirs adapted for delivering water from nearby secure water sources, the status of which always was monitored by medical personnel.

Much more also was learned. For example, the fact that the presence of canned food products at the regimental and battalion level does not fully solve the meal problem if there is a shortage of refrigerated trucks and cooling chambers for food delivery and storage. It also turned out that chlorination units for decontaminating water need improvement and the capacity of standard canteens in which boiled water was issued clearly was insufficient for mountain operations. Moreover, plastic canteens proved to be flimsy and so of little use.

Certain items of clothing and related gear—footwear, sleeping bags, individual gear—also earned just censure. The overall weight of gear carried by the soldier, counting weapons and dry rations, averaged 32 kg. Try running in the mountains with that load! Appropriate physical conditioning is necessary, which proved insufficient both for enlisted men as well as officers. They tried not to take warm items along: on the plain they suffered from the heat, but in the mountains they shivered from cold. They caught cold. They got sick. The climate and terrain require getting used to, and time for adaptation.

We did learn to counter the high illness rate, but unfortunately not right away. In particular we began to acclimatize people in training subunits and prepare them for operations on mountainous desert terrain. The fact is that in an emergency situation a soldier has to know how to do a great deal: for example, use the individual dressing pack, stop the flow of blood with a tourniquet and make stretchers from improvised means; finally, simply start a bonfire to get dry, to heat tinned stew, and to boil water, and to wash out the mess tin after the meal. We began to teach all this seriously.

It seemed Afghanistan would force us to ponder a great deal, for we paid such a price for the lesson! Of course, no one is insured against a bullet in war, but one can and must be insured against monotonous meals, pediculosis and infectious diseases, especially in peacetime. There is one insurance policy here—a reliable logistic support system and priority attention to it on the part of all commanders and officers in charge, plus well thought-out personal training of officers and men.

Our miscalculations in the "social sphere" in that war are visible especially graphically in the mirror of medical statistics. At first it was impossible to have a look at it because of the dense veil of secrecy, but when the covers were removed from secrets, what was seen apparently surprised no one. At the very least, it did not arouse us to any kind of radical actions. It is a pity. There is something to ponder here.

According to data of Major General of Medical Service V. S. Perepelkin, former USSR Ministry of Defense chief epidemiologist, there were from 8 to 12 cases of illness for each wound in Afghanistan, and acute intestinal infections, viral hepatitis and typhoid predominated among the illnesses.

There also are more precise figures. Voyenizdat published the book "Grif sekretnosti snyat. Poteri Vooruzhennykh Sil SSSR v voynakh, boyevykh deystviyakh i voyennykh konfliktakh" [Declassified. USSR Armed Forces Losses in Wars, Combat Operations and Military Conflicts] in 1993 under the general editorship of Candidate of Military Sciences Colonel General G. F. Krivosheyev. We will give a few quotes from it:

"...During the period from 25 December 1979 through 15 February 1989, 620,000 servicemen performed military service in troops located on Republic of Afghanistan territory..."

"Overall irrecoverable personnel losses (killed, died from wounds and illnesses, perished in disasters and as a result of incidents and accidents) of the Soviet Armed Forces together with Border Guard Troops and Internal Security Troops were 14,453 persons. There were 469,685 sick, wounded, and injured, including 53,753 wounded, contused and traumatized (11.44 percent) and 415,932 sick (88.56 percent)."

Further (pay attention!): "A significant place in the overall number of sick, wounded, and injured is held by the sick (89 percent). . . . Despite steps taken by the medical-sanitary service, during the 110 months Soviet troops were present in Afghanistan 415,932 persons fell ill—115,308 with infectious hepatitis, 31,080 with typhoid and 140,665 with other infectious illnesses."

Appalling figures! It appeared that commanders and rear services personnel were absorbing sad experience through their skin. One does not measure seven times, but ten times, before cutting where it is a question of people's health, which means also of subunit combat readiness. But what do we see in practice?

Let us consider the everyday aspect of certain instances, albeit incomparable in scale, which required an emergency concentration of troops. We will leave aside political evaluations and focus attention on rear services problems.

Armenia after the 1988 earthquake. Because of inattention to troop logistic support, it was almost necessary to save the rescuing soldiers themselves from mass illnesses.

Tbilisi, 1989. The Kostroma airborne regiment and Akhalkalaki motorized rifle regiment were moved with one set of underwear and the Kutaisi air assault brigade was "landed" on the bare floor of barracks even without this little bit. Tiraspol, 1992. Only the brevity of the conflict saved 14th Army from hospital beds in contagious isolation wards because of the absence of good-quality water for drinking and preparing meals under field conditions. Moscow, 1993. Troops were accommodated in buildings of the so-called parade ground, where utilities were in a sorry state.

Some will say these are trivial things. But is it trivial when it concerns everyday troop life, one of the foundations of their combat readiness? Especially if we establish mobile forces, who specifically are to operate in isolation from permanent locations. We must etch in our memory once and for all that combat readiness and everyday life are inseparable; otherwise troops become mass collectors of diseases.

The fact is, people's health is dear, both figuratively and literally. Treating one serviceman cost the budget R52-898 in 1990 prices depending on the kind, seriousness and duration of the illness. Today we can boldly add three zeroes to these figures at a minimum, plus insurance. The amounts turn out to be gigantic on the scale of the Armed Forces. A person involuntarily falls to thinking whether or not it is worth economizing on the everyday life of officers and men. The answer to such a question is obvious in a society in which any decision is based on an economic calculation. The approach to troop logistic support is different there. Since we are heading for the same thing, it is worth taking a close look.

In preparing for Persian Gulf operations the Americans, who we know do not cast money to the winds, deemed it advantageous not to economize in establishing a powerful base and broad infrastructure of troop logistic support in the desert. They even preferred to airlift water from America to avoid mass illnesses, and a great deal was required. And if the need arose, they also boldly undertook to "violate" the guidance document: water consumption for one person was taken to 80 liters a day, approximately half more than the standard envisaged by U.S. Army instructions on field water supply in arid regions.

In food support they used versions of a lightweight ration of higher calorie content. To warm meals, tank crews were supplied with spiral electric heaters and the infantry with metal containers for boiling water.

Canned food also came to the troops with a device installed in the bottom of the cans permitting breakfast, dinner or supper to be heated in a matter of minutes under any conditions. They developed and supplied to soldiers even chocolate which does not melt or lose its nutritious qualities in 60° heat.

Desert Storm also became a test for new field clothing—light, strong coveralls, sleeping bags, backpacks and much more, without which everyday life in war can negatively affect the morale and mental state of troops and their combat effectiveness.

They paid much attention to personal preparedness of servicemen, among whom there also were women, for desert operations. All this allowed troops to achieve the goals set with minimum combat losses and minimum sick, wounded and injured.

And what about our military industry? In past years it did a great deal for battle, but for everyday life? But even that was yesterday. Today the question sounds almost tactless, for we know the state of the defense establishment. Nevertheless, developers are not sitting idly by. Work is under way to create new field clothing with high thermal properties, and inflatable troop tents, electrically heated suits for tankers, and compact, high-calorie rations also are in the plans.

Splendid biofilters for water already are being produced and are being snatched up like hotcakes by Holland and Near Eastern countries. But our Ministry of Defense often simply is in no condition to pay for products ordered. The path of "everyday wonders" to the main consumer is long, very long. The arsenal of advanced developments is greatly outstripping capacities both of the economy as well as of the military budget.

By the way, there also is another aspect of the problem here. It is the commander's task and obligation to teach the soldier to win, which means to be able not only to fight, but also survive. Unfortunately, however, we often place emphasis exclusively on the first component of the science of winning. We teach, while at times forgetting that battle and everyday life are inseparable, that a break in this unity out of forgetfulness, ignorance or negligence inevitably leads to decreased combat readiness.

This means it is time to make essential changes in the combat training program as well, to teach not only excellent mastery of equipment and weapons, not only to fight, but perhaps first and foremost simply to live under conditions that approach combat conditions to the maximum. And to survive without losing health in the extreme situations with which not just military life, but also everyday life is fraught.

This too is a great art. Do we teach it with the very same regularity with which we hold classes in firing, driving, and social-state training? Meanwhile, enterprising people already are opening "survival schools" and taking money for training in them. Such knowledge also would come in handy for soldiers of mobile forces, for peacemakers and for those brought in to mop up in the aftermath of emergency situations—everyone who has gone through the Army.

It also would come in handy for our soldiers in Tajikistan, where the war breathes down your neck each day. In a year's time much there has changed for the better in the settling in and everyday life of troops. Well, even a year is no small period of time, and we know time is a good teacher. We will hope it has taught us. No matter what the present is like, it is a sin to forget lessons of the past so that it is not repeated in the future.

Further, attention to problems of logistic support to personnel acquires special acuteness and social significance today also because troop withdrawal from the near and far abroad is in full swing. Entire formations, units and subunits have to settle in and adjust combat training, service and everyday life in new locations, and by no means always in places prepared and outfitted in advance. In order for commanders, rear services specialists and military medical personnel to know where to pay special attention in the sanitary-epidemiologic condition of troops suddenly redeployed to other regions, we will remind you of **recommendations** scattered through various guidance documents, **fulfillment of which is necessary to preserve a high level of combat effectiveness of personnel both at permanent locations and under extreme conditions of modern combat operations:**

- coordinating logistic, engineer and medical support with the personnel illness rate forecast and the dynamics of adaptation of servicemen's bodies to extreme conditions of the environment, service and everyday life;
- allocating sufficient time to create the personnel's immune protection and to train them in rules of behavior under the region's conditions;
- reconnoitering water sources, with a laboratory study of water quality;
- securing water line facilities;
- placing means of potable water delivery and storage in a serviceable condition;
- additionally decontaminating water from a city water line;
- outfitting with a sufficient quantity of means for purifying individual water reserves and individual canteens;
- establishing bottled water reserves;
- delivering units for reducing a high initial level of microbial contamination of water (purification filters, containers for boiling and so on);
- organizing a supply of good-quality water for drinking by small parties during raids, combat operations, in a range guard, and on sentry duty;
- training personnel in rules of using potable water, including handling water purification devices;
- planning and conducting environmental protection measures, preventing the contamination of grounds where troops are accommodated, prophylactic disinfection of common-use places, and disinfestation;
- not allowing prolonged eating of canned foods;
- supplying subunits with a complete set of containers for delivering hot meals to remote posts;
- providing polyvitaminic preparations from the day a redeployment order is received regardless of time of year;
- delivering equipment for supplying water to enlisted messes in the quantity necessary for keeping them in a satisfactory sanitary condition (at least 20 liters per person, including 16 liters of hot water);
- preparing places for washing mess tins;
- monitoring prepared food portions for full weight;
- replenishing sets of underwear and bedding;
- outfitting each subunit with a separate bath house;
- complying with the personnel washing schedule or procedure;
- conducting antipediculosis measures (regular inspections, disinfestation treatments);
- accomplishing disinfection in centers of infectious illnesses no later than three hours from the moment a sick person is identified;
- isolating infectious patients immediately after identification and hospitalizing them in the first 24 hours;
- establishing in advance reserves of means for immunoprotection of personnel against the infectious illnesses dominant in a zone of upcoming operations (immunoglobulins, vaccines, anatoxins, antibiotics), for pharmacological adjustment of the process of adapting servicemen's bodies to extreme conditions of the environment, for optimizing physical and mental working capacity, and for convalescence after illnesses and wounds.

TOR-M1 SAM Fighting Vehicle

94UM0590K Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 40-41

[Article by Major S. Samoylyuk under rubric "Exercise Experience": "TOR in the Desert"]

[FBIS Translated Text] *Two series-produced TOR-M1 close-range SAM system fighting vehicles were displayed at the IDEX-93 international exhibition held in Abu Dhabi, capital of the United Arab Emirates. Our correspondent asked the immediate participants of those events, V. Osipov, deputy chief designer of Antey NPO [Scientific Production Association], and A. Kiselev, chief of a TOR-M1 SAM system fighting vehicle crew, to tell what impression their work made on foreign specialists.*

The equipment arrived in Abu Dhabi by sea. The crew made sure of the serviceability of gear right in port using the built-in functional monitoring system. Then they used trailers to transport one vehicle to the exhibition compound for display and the other to a range on wet salt flats amidst sand dunes 40 km from the city for demonstration firings. The weather clearly had decided to test the Russians' strength: initially rain "worked over" the city and range for two days; then there were two days of sandstorms, when dunes "smoked" and changed outlines before one's eyes; and then there was heat that was unusual for us at this time of year—up to 38°C in the shade. But both people and equipment managed to demonstrate all the best of which they were capable.

A crew of three—chief, operator and driver—performed combat work and servicing. Inasmuch as we had not taken the loader/transporter with us, we had to load the SAM fighting vehicle with missiles using an ordinary hoisting crane. The crew coped with this operation in 30 minutes.

Before the beginning of firings the Russian party advanced a proposal to developers of the Canadian Crotale and French ADATS SAM systems about conducting joint firings against the same types of targets—initially against ours, then against those being used in these countries. This would provide an opportunity for a direct comparison of the competing air defense systems. But no consent came.

The training drill was conducted with an operational launch. An MD-20 target missile was used as the target; it simulated a "cruise missile" or "glide bomb" type of target in its radiotechnical characteristics. It was launched from a range of around 17 km from TOR. The first target was not engaged—we observed its flight trajectory and determined the impact point with the help of system gear. We took the second one under automatic tracking at a range of 10 km from the system, then launched a missile against it. The guidance process went normally. The vehicle crew observed detonation on the screen of the television-optical sight and registered a change in the target movement trajectory.

Demonstration firings began three days later. The first mission was to engage the target with one missile, which was launched when the target was 6.8 km from the SAM fighting vehicle. Missile impact with the target occurred near the ground on the descending branch of the trajectory. Firing was repeated at the request of spectators. TOR again moved to the firing line. The missile was launched at a range of 7.5 km from the target. The guidance process and warhead detonation also caused no doubt as to reliable target engagement.

After another two days the next mission was performed—firing two missiles against one target, which was hit with the very first missile. The second missile's warhead fuze now operated against the destroyed target. A night demonstration was conducted after the daytime one. Its program included firing against targets initially with one missile, then with two. Equipped with tracers, the targets left a luminous trace in the night sky, and the impact of missiles on a target was accompanied by a bright flash. Both firings were successful and made a big impression on spectators.

Between firings at the range and in the exhibition compound our specialists had to answer numerous questions of representatives of military delegations from various countries. They were interested in features of operation, servicing and training. Based on results of the operation of Russian equipment on the range in the United Arab Emirates, it can be said boldly that the TOR SAM system functioned faultlessly. All eight missiles launched hit the targets. The life support system (air conditioner, ventilation system) created normal conditions for the combat team in the operator compartment.

All system combat equipment—command-information equipment, SAM weapons, control equipment, autonomous power supply system, and navigation and communications equipment—is accommodated on one GM-355 tracked, self-propelled chassis and represents a functionally complete fighting unit, a fighting vehicle. The TOR-M1 system is the basic tactical air defense weapon at the division level. It is capable of performing combat missions under any climatic conditions and is intended for protecting installations against mass strikes of enemy precision weapons as well as of aircraft and helicopters.

Together with the computer, the target acquisition radar included in the system detects and recognizes up to 48 targets at a range of 25 km, then tracks the ten most dangerous ones. These targets are distributed in a priority series by the threat criterion. Fire is prepared against the most "important" ones. Data on these targets go to the commander's console and in parallel to the missile tracking and guidance radar, which updates target designation parameters and performs tracking and four-coordinate measurement of target motion. Simultaneous measurement of coordinates of two targets and of missiles being guided to them is performed in the work sector (an angle of 15°x15°). Targets are ranked by class based on trajectory and signal characteristics. This information goes to the missile control system for optimizing its flight configuration. Data are processed and systems of the complex are controlled using a digital computer system.

System Specifications and Performance Characteristics

Target engagement range, km	1-12
Range of altitudes, m	10-6,000
Reaction time from moment of target acquisition, seconds	5-8
Number of missiles (ready inventory)	8
Number of channels per target (simultaneously)	2
Speed, km/hr	65

A vertical launch tube is located within the 360° traverse turret. Two transport-launch canisters with missiles are accommodated in it vertically. The 9M331 is a solid-propellant, single-stage, surface-to-air guided missile made with a canard-wing design. The fragmentation-high explosive warhead consists of fragments of high-density alloy. It is detonated by an active proximity fuze. There is radio command guidance to the target. The missile has high maneuver characteristics (permissible g-load to 30 g's), which permits engaging small, high-speed, low-altitude, armored targets maneuvering with a g-load to 12 g's. The 9M331 is delivered to troops in a fuzed condition and requires no servicing and maintenance for ten years.

The ready inventory of missiles is replenished using the loader/transporter, which is supplied with a special loading device, a manipulator. It takes 18 minutes to load the fighting vehicle with a full unit of fire. It is possible to load missiles from the transporter with a crane of sufficient load-hoisting capacity used in the national economy, with the loading device powered from the fighting vehicle's power supply system.

A built-in functional monitoring system is provided in the TOR-M1 complex fighting vehicle for maintaining combat readiness and for reliable evaluation of the status of gear. It automatically checks for correct functioning of all fighting vehicle equipment and gives the crew commander an assessment of its readiness. In case there is a malfunction, a search is made and the element that failed is determined with an accuracy to a group of panels.

The TOR-M1 fighting vehicle is capable of performing a combat mission autonomously or as part of a division automated air defense system. The Ranzhir or Kasatelnaya battery command post can be used as part of the system to control combat operation of the TOR-M1 complex. Data exchange as part of the ASUPVO [automated air defense control system] is over telecode radio communications channels. The crew consists of the commander, operator and driver. There is crew protection against weapons of mass destruction; special equipment is used to create normal conditions of habitability within the turret working compartment.

A special classroom simulator has been developed for training fighting vehicle operators and keeping combat crews combat ready without expending the life of system combat equipment. The simulator completely reproduces the fighting vehicle interior and main console. It simulates an air situation and all data presented to the crew by system equipment in battle. Scenarios of combat operations are specified by the training director from a special console and are prepared by the simulator's special digital computer in close conformity with a real situation. Operator skills necessary for working as part of a combat crew are achieved in 2.5 hours of work. The complete training course is designed for 20 hours.

The TOR-M1 all-weather surface-to-air missile weapon system is intended for performing air defense missions at division level. It provides effective air defense of military and civilian installations against surprise attacks by cruise missiles, guided bombs, aircraft, helicopters, and unmanned and remotely controlled attack vehicles. The complex is capable of performing combat missions in all climatic conditions. Features distinguishing the TOR-M1 from systems of this class are high maneuverability, mobility, short reaction time, combat work automation, and effectiveness in firing against a wide class of targets.

WWII Mine Traps and Booby Traps

94UM0590L Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 45-46

[Article by A. Soskov, candidate of military sciences, docent, under rubric "For Victory Semicentennial": "Traps for the Combat Engineer"]

[FBIS Translated Text] Mined obstacles are one of the principal combat assets of engineer troops in all armies. They are being improved constantly in an attempt to achieve greatest effectiveness.

We made wide use of mined obstacles in the Great Patriotic War, but fascist German troops retreating westward also began using them on a mass basis beginning in 1943. In addition to the usual standard mining schemes, new techniques of using mines and fougasses, which were called mine traps and booby traps, began to spread in both armies.

It is known from official sources of that time that any mine was called a mine trap when the charge of explosives installed in a certain place exploded from an attempt to shift (move) it from in place. Most often they were emplaced as single fougasses (mines) in the most unexpected places: houses, structures, by items of everyday use, weapons and so on.

By order of the Supreme High Command, state defensive lines, particularly antitank ditches, began to be built in the rear to counter the advance of enemy troops, but their combat effectiveness far from corresponded to efforts expended in making them.

Then a new decision appeared: to replace the ditches with antitank traps. These were pits which somewhat exceeded the dimensions of tanks, with Molotov cocktails arranged on the bottom. The pits would be covered on top by light, concealing decking. They were used with success at the Southern and North Caucasus fronts.

In the Battle of Moscow a rampart of straw, boughs and brushwood was made and doused with fuel in a half-kilometer sector in the direction of Golitsino Station against German tanks that had penetrated. The rampart was set afire with the enemy's approach. As a result the enemy turned back and suffered losses from our artillery fire. It was reported that 25 of 40 tanks were knocked out.

Mine sled barriers were used with success during battles in built-up areas, especially within limits of narrow streets. Several antitank mines connected by rope or attached to boards and placed alongside houses would be turned across the street directly ahead of the enemy with the appearance of enemy tanks. The effect of sudden explosions would produce rather good results.

The experience of our engineer troops provides a multitude of other examples of making mine traps and booby traps, which were used especially often by reconnaissance and raiding parties and in partisan detachments. Both homemade as well as technical equipment (TOS—especially secret equipment) was used. There are many articles about this in the press, including in memoirs of colonels I. Starinov, B. Epov, A. Ivolgin and other veterans of the engineer troops. But in this article we will speak mainly about actions of combat engineers.

We will cite just a few examples which are of interest even now, when bloody battles are going on in several areas of the world and various booby traps from the sphere of mined obstacles are being used. The experience of the past also has not lost its significance for present generations. When we know more, we will make fewer mistakes.

To safeguard troops from losses in the war years, staffs of engineer troops of fronts and armies would issue information materials (leaflets, bulletins, albums) showing mine emplacement techniques.

Thus, the staff of Leningrad Front engineer troops published a special album in 1944 which cited specific examples of German use of booby traps.

Most often German combat engineers would leave trip wire-type booby traps. Abandoned weapons—pistols, assault rifles, machineguns—would be found on territory liberated from the enemy, and often a very thin wire 1-2 m long would run from some secondary part; it would be connected with the pin of a fuze inserted into a camouflaged high explosive charge. Any attempt to use this captured equipment threatened death.

Here are other examples.

A backpack full of something lay on the shoulder of the road. After carefully inspecting it, combat engineers discovered an 81-mm mortar round inside with a trip wire-type fuze inserted. Picking up this backpack threatened an explosion.

Ordinary firewood lay near a Russian stove in a house. An inspection of it revealed a cord tied to one log and connected with a mine fuze.

And in a liberated dugout they discovered a fougasse whose friction fuze was connected by wire with an engineer shovel standing next to a post. They tried to take the shovel and an explosion resulted.

Booby traps were distinguished by great diversity: trip wire-type, pressure release, pressure-operated, thermic and so on.

The press of that time reported that a high explosive projectile was found hidden in the kitchen stove flue in the semidemolished home of writer Serafimovich.

A pile of books lay on a school desk in a school room. With careful inspection, combat engineers detected a wire under the pile of books leading to a fuze under the floor.

Very often, pressure-operated booby traps which functioned under a person's weight would be emplaced in houses (beneath stairs and floorboards).

In a house in the liberated village of Tuganitsy, several bricks were removed from beneath the stove and two T-35 mines with screwed-in fuzes laid in their place. Ashes concealed traces of the "operation"...

The author of the article had occasion to become familiar with a new technique of emplacing a land mine during liberation of the Kuban. After Petrovskaya Stanitsa was liberated, much equipment passed along the road through its center. Our platoon checked the road, but there was an extraordinary occurrence on the second day—a tank blew up. We made a repeat check of the road, but found no mines. Still, Sergeant A. Alyabyev, my assistant platoon commander, could not rest. Again and again he inspected every little scrap and the suspicious places along the road. Finally he came across the end of a wooden stake protruding from the ground, concealed by a clump of grass. When a layer of earth was carefully removed, it turned out that this stake rested on the fuze of a twin German mine at a depth of one meter.

Of course it is impossible to detect such a mine either by probe or by mine detector. The sergeant was decorated at that time with the medal "For Combat Merit." By the way, the Germans also used similar techniques at other fronts.

During the past war we combat engineers more than once ran across instances where the Germans turned even abandoned corpses of their own soldiers into traps. Children's playthings in houses often were mined.

In captured stacks of artillery ammunition and engineer mines we often would come across allegedly carelessly emplaced traps, which were placed with the goal of concealing carefully hidden ones and lulling a combat engineer's vigilance.

The enemy stopped at nothing. According to a report of the staff of Karelian Front engineer troops, a cat was discovered in a box covered by a lid in a house in a liberated village. The cat began meowing when combat engineers entered the house. An attempt to raise the lid ended in an explosion.

War is war. As shown by events of the last wars, including in Afghanistan, weapons and their methods of employment are continuously improved. But do not forget past experience.

'Touch and Go' Training Recommended To Extend Runway Life

94UM0590M Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) p 47

[Article by First Class Test Pilot Colonel V. Fortushnov: "What if Flight Operations Are From a Conveyer?"]

[FBIS Translated Text] *Among the series of very acute problems which our Air Force is experiencing under conditions of the crisis in the economy is a shortage of funds for repairing artificial runways of airfields, above all those which have been used for many years by aircraft of Military-Transport Aviation and Long-Range Aviation. It is the poor quality of the concrete runway surface that is becoming the reason for one malfunction or another in aircraft. This in turn leads to disruptions in the complex flight training rhythm of training units and subunits and line units and subunits and has a negative effect on their level of combat readiness.*

In the near future the Russian Air Force hardly will be allocated a sufficient amount from the state budget for quality repair of "worn-out" runways. In that situation just how can we extend the period of operation of the air fleet of big aviation? Here is the opinion of First Class Test Pilot Colonel V. Fortushnov based on results of his own research. He suggests using the "conveyer," a method well mastered by front aviation pilots, in the process of training Military-Transport Aviation and Long-Range Aviation crews in taking off and landing and when they are performing training flights.

How does the condition of the airfield runway surface affect fatigue wear of heavy aircraft airframes on the takeoff and landing run? A study of the question showed that on reaching a runway speed of 80 km/hr, vibration loads experienced by the aircraft airframe structure exceed permissible standards prescribed by design documentation, and they reach their peak in the range of speeds from 160 to 225 km/hr. In my opinion, using the "conveyer" will allow achieving more sparing loads on the structure, especially when making dual instruction and check flights using a standard pattern.

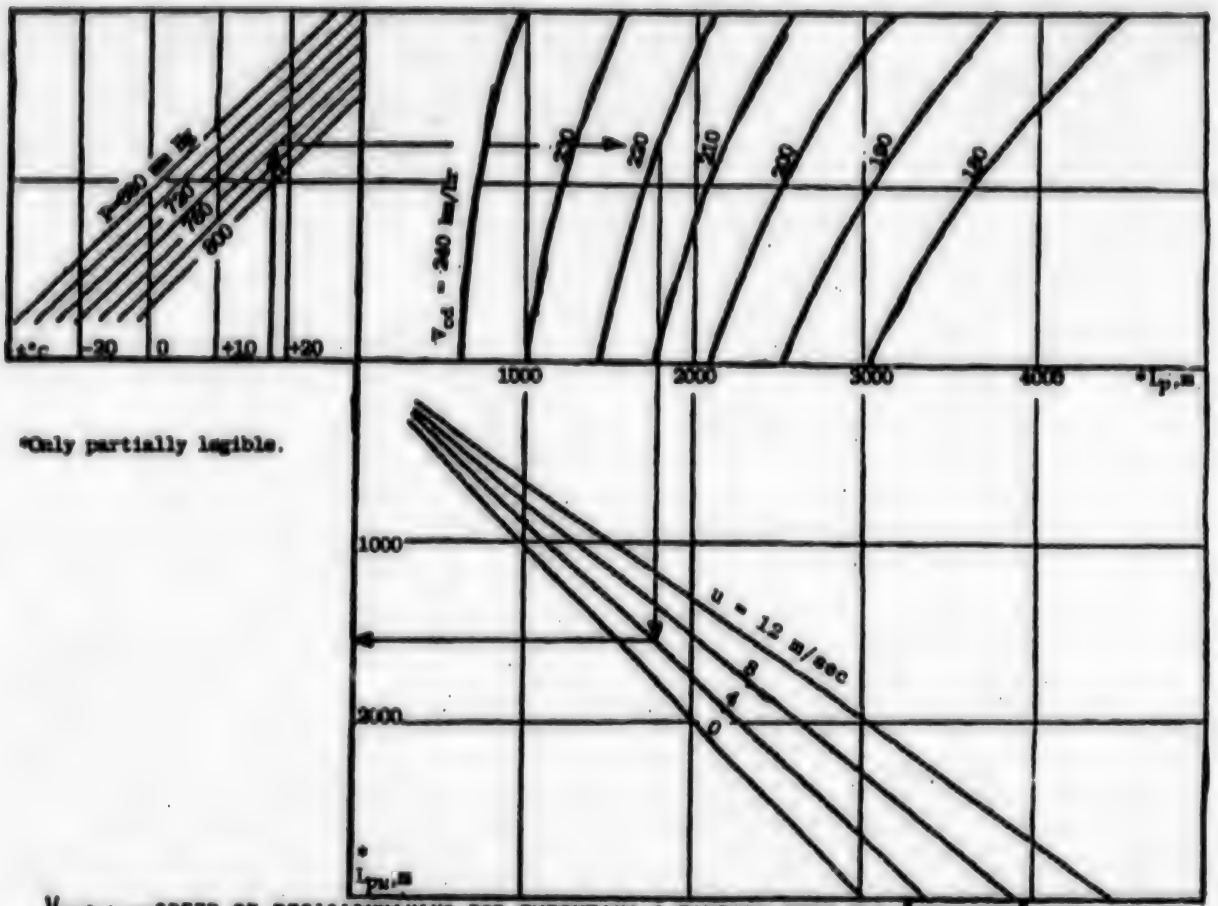
It has been established in particular that in this case the aircraft airframe structure is subjected to considerably lesser loads than during the takeoff and landing run when taking off and landing by the ordinary method, inasmuch as it does not fall within the range of speeds for maximum "jolting."

In the course of the flight experiment, crews did not experience any kind of difficulties in mastering the "conveyer," and we will emphasize that not a single instance was noted where flight personnel lost the skills of making a "normal" takeoff and landing. Moreover, pilots who regularly used the "conveyer" gained an additional "safety margin."

Naturally, the length of the takeoff run (in executing the "conveyer" it is the distance from the point the main landing gear wheels make contact with the runway during the landing to the separation point of the aircraft from it) and the takeoff distance change significantly depending on atmospheric conditions (air temperature and pressure, wind velocity and direction), takeoff weight and so on. Therefore it is advisable to use a nomogram (see figure), calculated for each type of aircraft, in taking those factors into account, especially in the course of mastering the "conveyer" on airfields with runways of limited size or situated high above sea level.

The following indicates the advisability of using the "conveyer" in the process of flight training of Military-Transport Aviation and Long-Range Aviation crews: first of all, the fatigue wear of the aircraft airframe structure is reduced almost eightfold compared with taking off and landing by the usual method; secondly, a significant saving is achieved in costly aviation fuel (from 35 to 62 percent) and in the life of aircraft engines (from 36 to 70 percent), as well as in the life of onboard systems and equipment (from 15 to 50 percent); thirdly, overall economic expenditures for each flight are cut approximately in half; fourthly, an opportunity appears to increase by 1.5 times the number of pilots who receive flight operations training in one flight operations shift.

I hope the suggestion I expressed will be supported by representatives of combat training directorates and centers for combat application and conversion-training of flight personnel of Military-Transport Aviation and Long-Range Aviation. I am also counting on the fact that after additional studies are performed and appropriate methods recommendations developed, flight operations using the "conveyer" will become an integral part of the program for training and improving the proficiency of crews of big aviation.



*Only partially legible.

$V_{cmdr's\ decision\ (cd)}$--SPEED OF DECISIONMAKING FOR EXECUTING A TAKEOFF FROM THE "CONVEYER" WITH CONSIDERATION OF THE AIRCRAFT'S LANDING WEIGHT

New Armed Forces Social-State Training Discipline

94UM0591A Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 48-51

[Article by Lieutenant Colonel V. Danilov under rubric "Social-State Training": "A Search for New Things, or 'Cosmetic Repair': Based on Results of Military-Pedagogic Research of Social-State Training"]

[FBIS Translated Text] Since May 1993 classes have been held with various categories of personnel in Russian Federation Armed Forces units and subunits under a new academic discipline—social-state training.

How is the process of establishing the new training subject in the troops going? What is the personnel's attitude toward it? What difficulties are being experienced by commanders and training group instructors in organizing and conducting classes? To answer these and other questions, military-pedagogic research was conducted in units and subunits of Moscow, Leningrad and Volga military districts.

There were 200 officers and warrant officers and 100 enlisted men and NCO's of various terms of service who underwent the sociological survey. Among respondents were unit and subunit commanders, social-state training group instructors, faculty members, post-graduate students, and students of military academies.

Respondents replied in different ways to the question: "Express your attitude to the new training subject of social-state training." While over 90 percent of instructors and students of academies expressed themselves positively, 76 percent of officers from the troops answered that it did not matter to them.

Respondents pointed out considerable difficulties in organizing and conducting classes in social-state training, above all due to a shortage of personnel. The effectiveness of classes also is reduced by consolidating social-state training groups of enlisted men and NCO's in the company, battalion and regiment. They often essentially are only of an informational nature. There is a shortage of social-state training instructors, especially at the lower level. Classes often are held with enlisted

men and NCO's by inexperienced young officers. Personnel do not prepare for social-state training classes. Methods training of social-state training instructors remains poor. Technical equipment (due to its breakdown or absence), visual aids and other training methods materials are not used in classes. Up to 80 percent of students display low activity in classes. There is a scarcity of literature in libraries on legislation, history, pedagogics, psychology and religion.

The research into the status of social-state training illuminated negative trends in the new discipline's development at the present stage. First of all, psychological stereotypes of previous political instruction continue to operate in the organization, content and methodology of holding classes. Secondly, there has been a noticeable drop in the personnel's interest in knowledge of the humanities. Thirdly, the trend remains stable toward a general "gross" approach to social-state training of personnel regardless of servicemen's age features, categories and education. Fourthly, administrative methods of directing social-state training continue to operate. Many classes are held not for the sake of improving the personnel's knowledge, but for the sake of a mark in the log. Hence the unadulterated stereotype and formalism. This discourages servicemen from studying and they avoid these classes under various pretexts (detail, fatigue duties, illness and so on). There are frequent cases of a reduction in the time allocated for them. Fifthly, the absolute majority of social-state training is only in the nature of information and enlightenment.

The trends enumerated attest to a crisis of old approaches to organizing servicemen's training. A contradiction is apparent between the existing instruction system and the personnel's spiritual needs, desires and interests.

A small "cosmetic repair" of former political training will not help resolve this contradiction; a strictly scientific approach to the problem is needed. Social-state training is a new pedagogic system and it will be able to function successfully only by relying on a certain theoretical foundation. What is needed is not simply a change in the "sign"—the name of the training discipline—and a change in content, but a genuine perestroyka of training, a systems analysis and the development of scientifically substantiated goals, principles, content and methodology.

In researching the status of the social-state training system, its most important structural components were analyzed: goals, content, training methodology, organization of groups. Let us examine these questions in more detail.

The pedagogic goal is a most important component of any pedagogic system and determines the very fact of its creation. The effectiveness of social-state training and results of personnel training and indoctrination largely will depend on precise concretization of goals and the selection of optimum ways to achieve them.

As we know, social-state training is conducted to shape in personnel a readiness to defend the homeland, allegiance to military duty, discipline, and pride in and responsibility for belonging to the Russian Federation Armed Forces, and to improve the psychological-pedagogic and legal knowledge of military cadres. In other words, this training subject is called upon to arm all servicemen with a system of knowledge of the humanities for shaping and developing their outlook, general and professional culture, and the moral-psychological qualities, skills and abilities needed for military service.

In profoundly understanding the goals of social-state training, instructors as a rule seek effective means of their realization and take a creative attitude toward pedagogic work. But the research showed that up to 80 percent of respondents have a vague idea of the goals of social-state training, limit themselves only to didactic or indoctrinational tasks, or are concerned only with informational enlightenment of personnel. As a result, one of the basic pedagogic laws is violated—unity of servicemen's training, indoctrination, development and psychological-pedagogic preparation. To keep this from happening, the following functions should be realized dialectically in the process of social-state training: informational-educational, indoctrinational, forming and developing, psychological-pedagogic, and social formation of the individual. This is why each social-state training group instructor is obligated to know precisely the goal and functions of the training discipline and to realize them in his practical activity.

Research also showed that it is necessary to get rid of the practice of taking the old metaphysical approach to class content. In choosing training material take into account the extent to which it will contribute to realization of goals of social-state training and development of necessary qualities, skills and abilities in a specific serviceman. It is necessary to change fundamentally in subject plans the ratio between general ideological questions and problems dictated by each serviceman's needs and by the conditions and specific nature of military service. And it is desirable to study all training topics of an informational nature at the time set aside for giving information to personnel and in hours of cultural and leisure-time work.

In the content it is advisable to single out such aspects as military-patriotic, philosophical-ideological, cultural-historical, sociopolitical, economic, psychological-pedagogic, moral-esthetic, legal and religious. Their correlation should stem from the personnel's needs and the interests of military service.

Unity of goal, content and methodology is one of the important pedagogic laws. The system of social-state training will function effectively if the means, forms and methods of pedagogic influence on personnel will permit realizing the goals outlined.

In the course of research it was established that a rather narrow arsenal of means of pedagogic influence is being

used in the troops: lectures, seminars, interviews, discussions, and narrative-discussions. Monotony, stereotype and formalism diminish the effectiveness of classes.

What practical steps must be taken to upgrade the methodology of social-state training?

First of all, the analysis of servicemen's intellectual development, interests, needs and abilities indicates a need to shift to the concept of developing education of officers and warrant officers. The fact is that a creative approach to solving difficult problems of training and educating personnel is demanded of them now as never before.

Many scientists and pedagogues refer to the need to introduce a problem-oriented and activity-oriented concept of training to the practice of the training and education process. This concept, tested experimentally during the training process in military educational institutions, will permit increasing servicemen's cognitive activity and their interest in knowledge of the humanities.

Experience shows that directives for introducing the new methodology are not enough; special pedagogic conditions are needed. For this it is important for group instructors to master methods of problem-oriented training (roundtables, discussions, debates, interviews and so on) during courses, instructional methods classes and demonstration classes.

Secondly, nontraditional methods tested by innovative pedagogues V. Shatalov, S. Lysenkova, Ye. Ilin and Sh. Amonashvili should be used more actively in social-state training classes.

Thirdly, give trainees themselves the right to choose topics for discussion in classes.

Fourthly, as research showed, it is advisable to set aside over half of the time allocated for social-state training for practical classes.

Fifthly, it is useful not only to diversify forms and methods, but also to change class locations more often (for example, training classroom, museum, club, barracks, enterprise and so on).

Results of the research confirmed that in putting together training groups one must take into account without fail the servicemen's age, educational and individual features and their interests and needs. It is obviously worthwhile to return to the practice of officers' free choice of the social-state training subject plan and to organize groups of officers to study questions of the history of the country and Armed Forces, legislation, pedagogics, psychology, and so on. This will improve the quality of instruction considerably. In addition, a sufficient number of professionals will be found in formations and units (lawyers, psychologists, culture and leisure officers) who will be able to hold classes rather effectively. Only officers who are capable, who think creatively, who are erudite and who display a desire to work with people can be group instructors.

Developing a system of training for training group instructors is a priority task, and the efficiency and effectiveness of social-state training depends on accomplishing it. What directions can be singled out here? Above all, the establishment of consulting centers and of services for assisting social-state training instructors and students and the organization of a system of supplementary education (faculties, circles, lecture centers, courses and so on) to help upgrade the professionalism of social-state training group instructors, to satisfy servicemen's needs for information, and for their self-education. Information-methods centers at officers' and other clubs can play more than a minor part here.

Today the social-state training system must be distinguished by greater democratism, which demands humanization of interpersonal relationships, high pedagogic culture, and independence of instructors in organizing classes and determining their content and methodology of conduct. All this will ensure servicemen's increased interest in training and will help shape in them the qualities needed for successful performance of official duties.

EQUIPMENT AND ARMAMENT

US, NATO Designations of Russian Weapons

94UM0591B Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 52-55

[Article by I. Sutyagin, scientific associate of Russian Academy of Sciences United States and Canada Institute, under rubric "Study. Operation"]

[FBIS Translated Text] Two designation systems basically are used abroad to denote Russian military equipment models. The first, adopted by NATO, is based on use of personified codewords and is distinguished by a well developed scheme for designating aircraft. Within the scope of the second system, developed in the United States, each model is given an alphanumeric code, which creates an orderly, complete scheme for designating guided missile weaponry as well as models of aircraft and missile equipment in the testing stage.

A uniform system is used in the United States and NATO for Russian Navy combatant ships and submarines, but there is no sufficiently orderly system of designation either in NATO or the United States for armored equipment, artillery, small arms, and engineer and special ordnance. In mentioning Russian models, foreign publications often cite their U.S. and NATO codes simultaneously. Therefore it is advisable to examine both systems in parallel.

Aircraft

In 1954 the NATO Committee for Coordination of Aviation Standards for Soviet Aircraft Designations adopted a system under which each aircraft and helicopter model was given an English codeword. The first letter of this word serves as a sign indicating the model's affiliation with a specific class; its English meaning plays no role.

The following letters are used to designate classes of aircraft:

- F (from "Fighter")—all kinds of fighters, i.e., fighter-bombers, front fighters and fighter-interceptors;
- B (from "Bomber")—bombers and reconnaissance aircraft;
- M (from "Miscellaneous")—auxiliary aircraft, including ASW and training aircraft;
- C (from "Cargo")—transport aircraft;
- H (from "Helicopter")—all types of helicopters.

Propeller aircraft are designated by one-syllable words and jet aircraft by words of more than one syllable. The number of syllables in names given to helicopters is arbitrary. A Latin letter is added to the code to denote a modification of the base model.

A number of deviations from rules of forming the designation have appeared in the almost 40 years of the system's use. For example, a combat training or training modification of a fighter base model previously was designated by a codeword beginning with the letter "M" (MiG-21bis fighter—Fishbed-N and UTI MiG-21U—Mongol-A). But this rule has not been applied from the Su-15 on (Su-15TM—Flagon-F and UTI Su-15U—Flagon-C). But the codeword "Bear" given to the base model of the Tu-95 bomber was retained for designating Tu-142 ASW aircraft.

Because of differences in approaches to the classification of aircraft being used in Russian and western countries, the Su-25 (Frogfoot) attack aircraft and Su-24 (Fencer) front bomber fell into the fighter category. The latter was deemed an analogue of the F-111 heavy tactical fighter and has the code of aircraft of this class specifically on this basis.

In denoting Soviet (now Russian) aircraft, the United States adheres to the system adopted in the USSR in 1940. In accordance with it, each aircraft or helicopter model is designated by an alphanumeric code in which the letters indicate the design bureau which developed the aircraft (initially this was derived from the last name of the general designer) and the digits indicate its number. But that scheme gives no clear idea of the class to which the model belongs.

We will cite an example of the designation of selected Russian aircraft in NATO and U.S. codes:

[Designation]	[NATO]	[U.S.]
Su-27	Flanker	Su-27
MiG-29	Fulcrum	MiG-29
MiG-31	Foxhound	MiG-31
Tu-160	Blackjack	Tu-160
Il-78	Midas	Il-78
Il-38	May	Il-38
A-50	Mainstay	Unknown
An-12	Cub	An-12
Il-76	Candid	Il-76
Mi-8	Hip	Mi-8
Ka-27	Helix	Ka-27
Ka-50	Hokum	Ka-50

Aircraft are given a temporary designation "RAM-(Latin letter)" when there is information abroad about the beginning of their flight tests in the LII [Flight Research Institute] imeni Gromov. It is used until the design bureau in which the aircraft was developed and the class to which it belongs become known. "RAM" indicates the location for testing the model (the West calls the Flight Research Institute airfield complex in the city of Zhukovskiy Ramenskoye from the name of the nearby station) and the Latin letter indicates its serial number. For example, in the course of tests the Tu-160 was denoted RAM-P and the Su-27 RAM-J.

Missile Weapons

In the early 1960's NATO also extended the principle of Soviet aircraft classification to guided missile weapons. All surface-to-surface missiles began to be given a codeword beginning with the letter "S." A shortcoming of this scheme is the fact that such diverse weapon systems as land-based and sea-based intercontinental missiles and antisubmarine and antitank missile systems end up in one code category.

In the coding system adopted in the United States, surface-to-surface missiles are denoted SS-xx. The letter "C" (from "Cruise") is added—SSC-xx—to the designation of land missile systems in the surface-to-surface class (including coastal antiship systems) equipped with cruise missiles. Antitank missiles have the index AT (from "Anti-Tank")—AT-xx.

The letter "N" (from "Naval") is present in the code of naval missiles; it is written with a dash after "SS"—SS-N-xx. A shortcoming of the code is the fact that it is impossible to determine from it the class to which a missile belongs (submarine ballistic, antiship, or antisubmarine) and the type of platform ship.

Under the U.S. system the digital index indicates a specific missile system and is given to it as the United States obtains information about its becoming operational. If the system is a modification of a base version, then a letter notation is added to its digital index (for example, SS-N-3b). An abbreviation of the word "Modification" is added to its number only for ICBM modifications (SS-18 Mod. 4).

Examples of the designation of selected Soviet missiles and missile systems in NATO and U.S. codes are given below:

[Designation]	[NATO]	[U.S.]
RS-18	Stiletto	SS-19
RS-20	Satan	SS-18
RS-22	Scalpel	SS-24
RS-12M	Sickle	SS-25
RSM-52	Sturgeon	SS-N-20
RSM-54	Skiff	SS-N-23
R-300	Scud-B	SS-1b
Tochka	Scarab	SS-21
Granit	Shipwreck	SS-N-19
Bazalt	Sandbox	SS-N-12
Sopka	Sepal	SSC-1b
Malyutka	Sagger	AT-3
P-120	Siren	SS-N-9

The designation of air-launched missiles in both systems depends on the class to which they belong, air-to-air or air-to-surface. In the first instance a word beginning with the letter "A" (NATO) or the index "AA-xx" (U.S.) is used as the code. In the second instance the code begins with the letter "K" and the index with AS-xx. Here are examples of such designations:

[Designation]	[NATO]	[U.S.]
R-27	Alamo	AA-10
R-33	Amos	AA-9
R-60	Aphid	AA-8
R-73	Archer	AA-11
Kh-55	Kent	AS-15
Kh-22	Kitchen	AS-4
Kh-15	Kickback	AS-16

Codewords beginning with the letter "G" have been chosen for SAM systems in the NATO system. As in the case of surface-to-surface missiles, the code does not reflect the difference between land-based and sea-based air defense systems. Moreover, surface-to-air guided missiles are the subject of the classification, and so land-based and sea-based SAM systems in which missiles of the same type are used are designated by one codeword. In the U.S. system, SAM systems have the index SA-xx, and the letter "N" additionally is present in the designation of shipboard systems. For example:

[Designation]	[NATO]	[U.S.]
S-75	Guideline	SA-2
S-125	Goa	SA-3
S-200	Gammon	SA-5
S-300V, 9M83 SAM launcher	Gladiator	SA-12a
S-300V, 9M82 SAM launcher	Giant	SA-12b
S-300P, S-300PT	Grumble	SA-10b
S-300PS, PM	Grumble	SA-10a
Rif	Grumble	SA-N-6
Shtil	Gadfly	SA-N-7
Krug	Ganef	SA-4
Kub/Kvadrat	Gainful	SA-6
Buk-Gang	Gadfly	SA-11
Strela-10	Gopher	SA-13
Igla	Gremlin	SA-14

Before systems which already have been identified in the West become operational with the Russian Army, the letter "X" is added to their letter index. Thus, the shipboard version of the Kh-35 missile was designated SS-NX-25. Missile systems detected in the course of flight tests but not identified as belonging to a specific class are given temporary codes which contain an indication of the test site (which provides grounds for certain suppositions as to the purpose of the given system) and the system serial number. Examples of such designations are given in the table.

Designation	Range	Systems Tested
BL-xx	Barnaul	Cruise missiles
KY-xx	Kapustin Yar	Tactical and operational-tactical missiles
NE-xx	Nenoksa	SLBM's
PL-xx	Plesetsk (Mirnyy)	ICBM's
SH-xx	Sary-Shagan	ABM defense systems
EM-xx	Emba	Tactical air defense systems

Combatant Ships and Submarines

The United States and NATO adopted a uniform coding system for combatant ships. From the mid-1950's to the early 1970's large (1st and 2nd rank) Soviet surface combatants were designated by words beginning with the letter "K." Later designations began to be used that corresponded to the actual name of the lead ship of a given design project. Thus, a Kiev-Class heavy air-capable cruiser is designated Kiev-Class CVGK. Combatant ships of 3rd and 4th rank still are designated by Russian words transliterated in Latin letters—basically the names of insects and diminutives (Grisha, Irka), and air cushion ships by the names of birds.

Soviet submarine design projects are designated not by letters of the Latin alphabet themselves, but by words given them for phonetic designation ("A"—Alfa, "B"—Bravo). Inasmuch as all letters of the alphabet already have been used, the last two design projects have been designated by what the West believes to be the Soviet names. In all cases, Roman numerals are added to the word for coding main modifications of a base design project. Here are examples of surface ship and submarine designations:

Groznyy-Class guided missile cruiser	Kynda
Kronshtadt-Class large ASW ship	Kresta II
Design Project 205 missile craft	Osa
Design Project 705 nuclear powered submarine	Alfa
Design Project 685 nuclear powered submarine (Komsomolets)	Mike
Design Project 651 submarine	Juliett

Ural-375 Truck Engine Replacement

94UM0591C Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 56-58

[Article by Colonel (Reserve) A. Zenushkin]

[FBIS Translated Text] To further improve technical parameters of Ural-375 family vehicles, the Russian Federation Ministry of Defense Main Motor Vehicle Directorate and UralAZ Production Association made the decision to replace ZIL-375 carbureting engines installed in them with KamAZ-740.10 diesel engines when major overhaul was performed on these vehicles. After modernization, the vehicles will be given the make Ural-375DR. Ural-375D, Ural-375N and Ural-375NM vehicles as well as the Ural-375A, Ural-375AM, Ural-375Ye, Ural-375YeM, Ural-375NYe and Ural-375NYeM chassis manufactured no earlier than 1973 are subject to conversion.

The first, second and third frame cross members are replaced on the vehicle during installation of the KamAZ-740 engine. This was caused by configuration features of the new power unit, its radiator, heater boiler and muffler. In addition, new brackets are being installed on the frame to attach the engine, storage batteries, pump unit, air cylinders, exhaust pipe, air pressure regulator and radiator stay rod. The front bumper and tow hooks also are being modified.

The Ural-375DR vehicle is equipped with a power unit consisting of the KamAZ-740.10 engine, KamAZ-14 clutch and KamAZ-141 transmission. Devices and assemblies from the Ural-4320 vehicle are used in its systems and mechanisms to ensure normal diesel operation, and the coarse fuel filter, lines, fuel feed control and reserve fuel tank cock are being used in the fuel system in particular. A new oil radiator with hoses and shut-off cock is being installed in the lubrication system, and the PZhD-30 heater, radiator and blinds are being installed in the cooling system due to increased heat emission and the engine configuration feature. In addition, an auxiliary brake mechanism, fording valve and ejection system are being installed in the muffler exhaust pipe.

The KamAZ-14 double-disk dry friction clutch has a mechanical linkage, with the position of supports, shafts, levers and rods changed (compared with the Ural-4320). The KamAZ-141 is a mechanical, five-speed transmission with a three-way gearshift and mechanical remote control. A step-up divider [uskoryayushchiy delitel] is attached to its crankcase. The gearshift lever is the very same as on the Ural-4320. Additional leafs have been installed between the fourth and fifth leafs in front axle springs. This permitted increasing the front axle load to 430 kg(f). The steering mechanism, hydraulic booster, steering wheel shaft and steering wheel were not changed. The power steering hydraulic system is equipped with new high-pressure lines. A pressure regulator, compressor drain hose, pneumatic lines, auxiliary brake linkage elements, air cylinder brackets and attachment parts from the Ural-4320 are used in the braking system.

The cab underwent substantial changes. There has been a change in shape of its front wall, where the gas pedal, fuel feed control knob, engine shutdown pedal, and clamps and brackets for electrical instrument attachments are accommodated. A new instrument panel was installed. The floor was modified for installing auxiliary brake lines, starter wires and the hydraulic hoist cock. A heater connected to the engine cooling system has been installed. The hood, side panels, radiator shell, headlight panels, fenders and running board splash guards are being modified according to drawings made by Ural Motor Vehicle Plant specialists, or standard ones are being used from the Ural-4320. Individual finning [opereniye] assemblies have been made removable for convenience in servicing and repairing the engine.

The electrical equipment system is one-wire, 24 volt (12 volt on Ural-375 vehicles). Two 6ST-190TR storage batteries, each with a capacity of 190 ampere-hours and connected in series, are installed in the vehicle. The storage battery negative terminal is connected with "ground" through a remote switch. The G-288Ye 1,000 watt ac generator operates together with the Model 1112.3702 contactless voltage regulator. The ST-142-B1 starter with sealed electromagnetic switch is used to start the engine. Headlights, parking lights, tail lights, license plate light, sealed backup light, cab dome light, swiveling headlight, multiple truck and trailer rig identification sign (3 cab roof lights), under-hood light and unsealed side turn indicator are used as light devices.

For the conversion of Ural-375 vehicles at Russian Federation Ministry of Defense automotive repair enterprises, Ural Motor Vehicle Plant specialists developed design documentation, technical specifications and instructions on installing the new power unit, and also a KamAZ-740.10 engine operating manual. In addition, the plant is manufacturing and supplying a set of parts and assemblies of over 80 descriptions for conversion of each Ural-375.

BMD-3 Airborne Fighting Vehicle

94UM0591D Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 56-58

[Article by Lieutenant Colonel S. Roshchin]

[FBIS Translated Text] *Descente* in French means "descent" or "landing." If we adhere strictly to the direct meaning of this word, the history of the airborne landing will lead us far off into past centuries. The first documented parachute jump was made by Venetian Fausto Veranzio in 1617. After that, jumps followed one after the other. Scientists, inventors, touring aeronauts, scouts and commandos jumped. In the 1920's jumps were made by individuals and by armed parties, people were landed, and cargoes were dropped. Germans, French, Russians and Italians jumped. But the priority in developing and realizing the idea of a mass airborne landing unquestionably belongs to Russia.

At the present time there are air-droppable vehicles in our Airborne Troops inventory to which not one army in the world has anything similar today. The well-known BMD-1 and BMD-2 airborne fighting vehicles are among them. They have high firepower sufficient for giving artillery support to attacking subunits, excellent maneuverability, and reliable armor protection. Because of their simplicity of servicing and maintenance, our airborne personnel have fallen in love with these vehicles.

The BMD-3 airborne fighting vehicle resulted from a further improvement of this class of equipment, and it differs substantially from previous models in all respects. Many innovations have been used in its construction. It represents a highly mobile, lightly armored, tracked, amphibious, air-droppable vehicle. The BMD-3 can be transported by Military-Transport Aviation aircraft and, in contrast to the BMD-1 and BMD-2, can be landed with the help of a multiple-canopy parachute system without a platform, with the full combat team accommodated in the vehicle on general-purpose seats.

Characteristics of Airborne Fighting Vehicles

Indicators	BMD-1	BMD-2	BMD-3
Type	Tracked, amphibious, air-droppable		Tracked, amphibious (including at sea), air-droppable on parachute system without platform and with combat team inside
Combat weight, t	7.6+2.5%	8.0+2.5%	12.5+3.2%
Combat team (crew and assault force)	7 (2 & 5)	7 (2 & 5)	7 (2 & 5)
Additional places	-	-	3
Clearance, mm	100-450	100-450	100-500
Armament:			
Number, type, caliber, mm	1x2A28x73	1x2A42x30	1x2A42x30
	3xPKTx7.62	2xPKTx7.62	1xPKTx7.62
			1xAGS-17x30
	9P135M Konkurs ATGM launcher		
Engine	5D20 diesel	5D20 diesel	2V-06-2 diesel
Power, kw	177	177	331
Maximum speed, km/hr:			
Highway	62	60	70
Afloat	10	10	10

The BMD-3 combat team consists of the crew and assault force. The crew includes the gunner-operator and driver, and the assault force consists of the commander, machinegunner, grenade launcher operator, assistant grenade launcher operator and rifleman. The vehicle hull has three compartments: driving, fighting and engine-transmission. The first compartment accommodates the driver's work station in the center, that of the grenade launcher operator on the left and that of the machinegunner on the right. All work stations of the compartment are equipped with individual hatches. Two general-purpose seats, which accommodate the driver and gunner-operator during the landing, are installed between them. The seats can be used for transporting personnel during movement.

The fighting compartment with rotating turret is situated in the middle part of the vehicle hull. The rifleman and assistant grenade launcher operator are in its rear near the engine bulkhead. Their general-purpose seats are on the right and left sides. Here too there are ball mounts for conducting assault rifle fire. A third general-purpose seat is installed for the period of the landing for the vehicle commander; after the landing it can be used to accommodate one more assault trooper. There is a large escape hatch at the rear allowing the combat team to exit the vehicle over the roof of the engine-transmission compartment. A ball mount is installed on the hatch roof for conducting assault rifle fire to the rear.

Serious attention has been given to improving crew and assault force protection. Thus, in contrast to the BMD-1 and BMD-2, the combat team does not suffer from the explosion of a mine with up to 2.5 kg of explosives under the BMD-3's track, and the attenuation factor of radioactive radiation is 2.5 as opposed to 1.5 in previous models.

Vehicle armament consists of the 2A42 30-mm automatic gun, which is stabilized in two planes, the PKT 7.62-mm machinegun coaxial with it and the Konkurs ATGM launcher, which are accommodated in the rotating turret. BMD-3 fire capabilities also have been expanded considerably by installing in it the AGS-17 automatic grenade launcher, which is located in the hull front plate on a hull mount to the driver's left. To his right is a hull mount for the RPKS 5.45-mm light

machinegun. The engine-transmission and fighting compartments are separated by a heat and sound insulating bulkhead. The power plant and transmission units are concentrated in the engine-transmission compartment.

A new 2V-06-2 six-cylinder, high-speed, multifuel, liquid-cooled, turbo-supercharged diesel has been installed in the vehicle. This engine's high reliability was demonstrated in tests under high mountain conditions and especially in sands of the Kara-Kum Desert. The air cleaner channel lost its seal on one of the first models of the vehicle with experimental air cleaner cartridges, and the engine operated for a long time while taking in a considerable amount of dust, but there was no noticeable deterioration in its characteristics. Along with basic diesel fuel, substitutes can be used as fuel for its operation in the entire range of ambient air temperatures—T-1, TS-1 and T-2 jet fuel and 72-76 octane gasoline. Such "omnivorousness" assumes very great importance for a vehicle intended for operating chiefly in the enemy rear and on foreign territory.

Starting the engine in the cold time of year is ensured with the help of an effective heater or an injectionless flame preheating [besforsunochnyy fakelnyy podogrev] system. The time for a BMD-3 to move out on alert is 5 minutes with an air temperature of -25°C, and around 20 minutes at -45°C.

The engine is connected with gear and turning mechanisms in a single unit, which is installed in the vehicle's engine-transmission compartment and attached to the hull floor by means of two rigid hoops and one shockproof support. Such a design permitted eliminating the need for alignment and additional adjustment of the unit during installation and substantially facilitated field repair of the vehicle.

The vehicle's movement afloat is by two water-jet propellers and is controlled by disconnecting one of them from the power drive. For crew safety when moving afloat, the BMD-3 is supplied with an emergency water evacuation system capable of removing large masses of water from the hull.

The undercarriage has five road wheels with single-wheel rubberized rollers. It consists of tracked propulsion, suspension and hydraulic system. The tracked propulsion includes two tracks, two drive sprockets, two idler wheels (the latter with a tensioning mechanism), ten road wheels and six track support rollers. The tracks have rubber-metal successive articulation. If necessary, antiskid tires or grousers for riding on asphalt can be installed on it. The vehicle set has a widened track for snow and marshes that provides trafficability on soils with low supporting power. If necessary, it is possible to mount tracks, road wheels and rims of driving wheels from the BMP-1.

The undercarriage hydraulic system supports the operation of actuating mechanisms when changing vehicle clearance, tensioning tracks, and raising road wheels on the suspended vehicle hull. In addition, the possibility is provided for connecting the hydraulic tool in the BMD-3 set to this system.

The vehicle is equipped with a filter-ventilation unit, automatic firefighting equipment and a system for laying smoke screens and launching illumination flares. A channel for delivering purified air to the half-masks of the combat team serves to protect crew members and the assault force against the effect of powder gases.

As already noted, there are no similar fighting vehicles in the world today. The German Wiesel can be considered the only analogue, and with great reservations, but its characteristics and capabilities cannot compare with the BMD-3.

MILITARY SCHOOL: DEVELOPMENT AND PROSPECTS

New Reserve and Cadres Training Air Command

94UM0591E Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 59-61

[Article by Colonel L. Pakhnin, deputy chief of Air Force Military Education Directorate: "Takeoff Into the 21st Century"]

[FBIS Translated Text] Optimizing the troop manpower acquisition system always has been the cherished dream both of the command element as well as of rank-and-file specialists in air units. And now the new table of organization structure designed for rational training and distribution of military cadres is in effect: the Reserve and Cadres Training Air Command (AKRPK) has been established. This is a move to a new level of development of Air Force command and control. The following comparison probably will be apropos: in awaiting results of reform of the military educational institution system, we are like a grain-grower who has just sowed the field in spring. What kind of graduates come into the troops at the beginning of the 21st century and how submissive air systems become to them depends on how completely the potential capabilities of a renewal of Air Force cadre policy are used.

An improvement in the system of military cadres training presumes its increased ability to react independently and promptly to current and future troop requirements for specialists to replace natural losses, conduct mobilization deployment and establish new units. One of the main criteria of how the Reserve and Cadres Training Air Command conforms to its purpose is assurance of high quality of the training and education process in Air Force educational institutions and, in the final account, the professionalism of their graduates. Even with the aviation cadres training system that existed earlier, which by the way in fact justified itself, we evaluated the work of military educational institutions according to that criterion. Meanwhile, direction of

the day-to-day activity of military educational institutions became substantially more complicated with a reduction in the number of large strategic air formations and a change in principles of logistic support to troops, in the system for ordering and delivering armament, aircraft and special equipment, and in finance and other kinds of supply. Unfortunately, now it is necessary to think not about training quality, but about the number of graduates.

The Reserve and Cadres Training Air Command has been made responsible for directing the activity of all Air Force educational institutions, including training methods, military-scientific, legal, cadres, logistic and financial support to training officer cadres and also the reserve. Appropriate directorates and services, whose main task is to organize the training of aviation specialists comprehensively and qualitatively, became part of the Command.

Leadership efficiency is achieved by directly subordinating school commandants to the commander of Reserve and Cadres Training. Conditions are being created for purposeful use of materiel and funds which are being allocated for development of the training facility and the social and everyday sphere of military educational institutions.

The presence in the Headquarters, Reserve and Cadres Training Air Command of all table of organization structures inherent to a large strategic air formation enabled resolving questions on a working basis both of the current day-to-day activity of schools as well as of advanced planning and improvement of the training process. In addition, this achieves a uniformity of views on forms, methods and means of fulfilling the basic principles of training different categories of specialists, and simplifies work of selecting and placing pedagogic, scientific and command cadres. Leadership and faculty personnel of military educational institutions now are not being involved in a large number of measures which are being carried out under the plans of large strategic formations and have nothing to do with the training process. All this permits purposefully engaging in pedagogic, educational and research work.

And already today there are specific results. The makeup of Air Force educational institutions has been determined and each school's capacity as well as structure has been updated. New curricula and training programs have been developed and are being introduced to the training process. Table of organization measures are being completed directly in the military educational institutions. A headquarters of the commander of reserve and cadres training is being formed on the base of the military district air force headquarters. Schools, training units, bases and other subunits which previously were part of other large strategic air formations are being taken into it, i.e., an organizational process is going on which precedes the stage of establishment. People understand that rigid time frames have been specified and there is no time for getting warmed up. And there can be no preparatory warm-up, since the Army constantly needs an influx of skilled cadres.

I think it is no secret to anyone that over the past years we trained even more military specialists than necessary. For example, we have almost twice as many of those same pilots as aircraft. But the process of renewing officer cadres goes on constantly. Some are discharged to the reserve on reaching maximum age and others leave because of illness or other personal reasons. But even in the presence of a certain excess of flight personnel, which formed with the reduction in Armed Forces numerical strength, we cannot permit the activity of schools to be halted. An interruption in the training of pilots or a shortage of pilots is more pernicious than a surplus. This can be said especially when there is a need to man new units.

It also should not be forgotten that creation of an educational institution and establishment of an instructor collective is a lengthy process. Specialists are especially needed here who possess sufficient experience in practical work. They are easy to lose, but difficult to find. Let us recall the 1960's, when a large number of aviation schools were closed. The majority of them had to be formed anew later. We would not like to have such miscalculations repeated.

Creation of the Reserve and Cadres Training Air Command permitted relieving large strategic air formation commanders of performing functions of directing military educational institutions not inherent to them and concentrating their efforts on maintaining combat readiness of subordinate formations and units. Now they are becoming the principal clients for military cadres and so have the right to place corresponding demands on the level of specialists' professional training.

After Air Force organizational formation is completed, it is planned to bring all large strategic formations, formations, units and establishments together into four air commands: Long-Range Aviation, Front Aviation, Military-Transport Aviation, and a Reserve and Cadres Training Command. It would appear that this structure will ensure stable, centralized command and control of Air Force personnel and assets in peacetime and in wartime as well, should the need arise. Here is another fact of no small importance: the numerical strength of the headquarters apparatus will be reduced by 15-20 percent through a reduction in military district air force command elements.

The steps taken are aimed above all at upgrading the operational command and control system. As an important element of this system, the Reserve and Cadres Training Air Command has been focussed on cadres training, on putting reserve aircraft into service quickly, and on accelerated graduation of specialists with a flight and engineering-technical profile when mobilization measures are conducted. This direction of its work is of priority importance: Russia's future depends on how things go.

Naturally, creation of a new headquarters exercising direction over all military educational institutions, air training centers and aircraft reserve bases located on all Russian Federation territory and having functions of logistic, technical, financial and other kinds of support required a revision of official duties of the heads of similar structures of the Main Commissariat of the Air Force and of commanders of Long-Range Aviation, Front Aviation and Military-Transport Aviation. A thorough study and work on this question now is under way. Optimum forms of coordination and subordination of the aforementioned structures are being identified.

The scale and rates of changes which occurred and which continue to occur in the life of the country and the world make such properties of the Armed Forces as flexibility, mobility, and the capability of reacting adequately and in a differentiated manner to any situation changes the most important ones. These properties are achieved through high precision and selectiveness of weapons, mobility and survivability of their delivery vehicles, and degree of intelligence and speed of the intelligence and command and control system. Especially high requirements are placed on the Air Force as being the leading and universal (in terms of employment) Armed Forces component.

A high level of intellect, presence of elements of romance, and prospects for development of the individual in the interests of society distinguish the profession of aviator as a kind of human activity. It is also of no small importance that our aviation has won a rather strong position and authority in the world. Consequently, regular Air Force personnel have all objective preconditions for further professional growth. Herein lies the basis for resolving the most difficult problems at a world level and for augmenting the Air Force's intellectual potential.

The search for and mastery of real ways of achieving those goals by central Air Force agencies and by regions with the active involvement of science are the essence of the ongoing reform. An important coordinating role is set aside in this work for the Reserve and Cadres Training Air Command. How completely and quickly these tasks will be implemented depends on each military aviator.

Moscow Higher Military Road Engineering School Commandant Interviewed

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[Interview with Major General Arkadiy Alekseyevich Tsukanov, candidate of military sciences, professor, chief of Moscow Higher Military Road Engineering School, by ARMEYSKIY SBORNIK correspondent Colonel A. Avdeyev, occasion, date and place not specified: "Elevate the Military Engineer's Authority"]

[FBIS Translated Text] In April 1967 the country's only military civil defense school was established in the suburban Moscow city of Balashikha. Initially it was not very popular among the youth, who more often aspired to becoming pilots, airborne troopers or tankers, but the school has become more attractive to the youth in recent years. Was that not the reason that the pupils' ranks were significantly augmented in this military educational institution in the past year against a background of a universal reduction in the number of entrants to military educational institutions?

Our correspondent chats with school commandant Major General A. Tsukanov, candidate of military sciences, professor, about further prospects for development and about problems connected with perestroyka of the training and educational process in this school.

[ARMEYSKIY SBORNIK] Comrade Major General, our readers are interested above all in just what your school represents today. If possible, tell briefly about this.

[Tsukanov] As you already know, the school was established in 1967. Its establishment took place under the immediate direction of Marshal V. I. Chuykov. Seven years later it was reorganized as the Moscow Higher Command School of Road and Engineering Troops. Then quite recently certain changes occurred again, and now our educational institution is called the Moscow Higher Military Road Engineering School and it has been made fully subordinate to the Russian Federation Ministry of Defense Federal Road Construction Directorate. This latter change is a logical stage of the higher school reform begun three years ago.

Now we can purposefully form training programs to train military specialists for the road troops at the highest level. Of course, also we are continuing and will continue to train officers for the Ministry for Emergency Situations, but now on the basis of contractual obligations.

In the process of transformations, the school has gone over to a five-year term of study since 1993 and has begun training construction engineers in specialties of building highways, airfields, bridges and transportation tunnels; mechanical engineers in specialties of hoisting-transportation, construction, and road construction vehicles and equipment; rescue mechanical engineers in engineer equipment vehicles; and highway engineers in organization of highway traffic.

[ARMEYSKIY SBORNIK] This means the main changes were in an expansion of the nomenclature of specialties?

[Tsukanov] Not just in this. The main thing is that it is an elevation of the quality of specialist training. I always sadly observed how the authority of the military engineer in the troops fell from year to year.

I am familiar with rather many facts where officer-specialists proved to be incompetent and sometimes even completely helpless in simple but out-of-the-ordinary situations.

Of course, it also would be possible to cite examples of our colleagues' capable, courageous actions in performing engineer missions, but still I can assert responsibly that the engineer in the troops has become a less important figure today than, let's say, some 30-40 years ago. There are now not that many highly erudite, talented persons in the troops capable of making calculations independently, designing, and in the final account creating (and the word "engineer" means creator). Is this not why instructors and scientists are invited from military academies and schools to perform difficult tasks such as constructing the bridge across the Amudarya in 1992?

Generally we now have to prepare not simply reliable executors of someone's plans, but creative individuals capable of making technical and organizational decisions on their own.

[ARMEYSKIY SBORNIK] Arkadiy Alekseyevich! Just what is being done directly to upgrade the training process in your school?

[Tsukanov] First of all, as I already noted, the transition to the five-year term of study. This allowed thoroughly adjusting the training programs, and not like earlier, to fit specific aims of the former Main Directorate of Military Educational Institutions, but in the context of international requirements placed on the graduate of a technical military educational institution. This means both that our diploma becomes more ponderable and the school itself becomes more attractive to the youth.

Naturally this will have an effect later on the number of school entrants and on the quality of officer training. Unfortunately, our choice among entrants previously was not rich—2-3 persons per slot.

By the way, the fact that we are the sole military educational institution in Russia which belongs to the International Engineer Education Association can serve as proof of the enormous work connected with upgrading curricula and training programs. And the fact is, this not only means the future high status of our graduates' diplomas, but also an opportunity to take part in international conferences and symposia on problems of the higher school, an exchange of experience, and reciprocal tours of duty of instructors and, I hope, of cadets themselves

Secondly, a strengthening of the faculty. Today, when a significant reduction is occurring in the Army, it is painfully disappointing to me that 45-50 year old instructors and scientific associates are being thoughtlessly sent into the reserve from military educational institutions. We are using all measures in an attempt to retain them, and we are even inviting them to us from other related military educational institutions.

There now are seven professors working here (there are two doctors of technical sciences among them). They are R. Ivanov, V. Zlakazov, Yu. Kozlov, I. Ivanenko, V. Puchkov and V. Tishkov. In addition, there are 35 candidates of sciences and docents. We already can openly pose the question of establishing the school's own post-graduate studies and a specialized academic council for conferring academic degrees. All chiefs of chairs are candidates of sciences and docents. Among them are V. Bakin, A. Bezruchkin, P. Romanchuk, V. Chalov, R. Shaknaytis, Ye. Shutov, N. Kivi and others.

Thirdly, an expansion and qualitative renewal of the training facility. It was 2-3 years ago that we wrote in advertising booklets for those entering the school: "In support of cadet studies there is modern equipment and vehicles, auditoriums, classrooms, study rooms, a computer laboratory, a production-training shop and a training center. The computer laboratory, television training center and various simulators are widely used in the training process." But 2-3 years in the presence of scientific-technical progress is an enormous time period.

Yes, we need new simulators, the latest electronic computer equipment, and models not only of modern equipment, but also of special equipment just prepared for manufacture.

With limited financing and reduced centralized deliveries, it is an extraordinarily difficult task to keep the already existing training facility in a normal condition.

We attempt to accomplish it with our own resources insofar as we can. We earn some of the funds by organizing production practice of cadets and officers at real highway and bridge construction and repair sites in Yaroslavl, Vladimir, Ryazan and Moscow oblasts. For example, 30 medium and high bridges with a load capacity of from 40 to 60 tonnes have been built just since 1980.

Further, thanks to the scientific potential created at the school, we now are in a position to permit ourselves the development of 2-3 ordered subjects in addition to scheduled scientific research. Thus, this year a proposal came from the Federal Highway Department for development of scientific themes. This is an additional source of our self-financing, which I hope will become more ponderable subsequently.

But I would not like anyone to get the opinion that we are "maintaining" ourselves. Everything that we can earn ourselves is only a small part of those funds we need for creating a modern training facility.

[ARMEYSKIY SBORNIK] Still, the cadet himself remains your principal object of attention. Tell me, what is being done to activate his desire to become specifically that military engineer whom you would like to see in the troops?

[Tsukanov] Everything I spoke of earlier is aimed at improving training quality and the prestige of the profession. I think that herein lies both the instrument and the motivation for instilling in cadets pride in their future profession.

And generally, I believe that the desire to become a good engineer must be manifested in the desire to learn well. And from all the familiar forms and methods of influencing the cadet, I would single out the main one here—individuality of training and education. That is my demand both on instructors and on subunit commanders.

We realize how important it is to develop trainees' creative activeness. Therefore we attach enormous importance to military-scientific, rationalization and invention work at the school. Each year we hold competitive reviews of the best cadet developments, we propagandize the experience of innovators and we take part in All-Services and All-Russian Contests of Student Work and in exhibitions of scientific-technical creativeness of the youth.

Based on results of the 19th Cadet Military Science Society Conference, six scientific works were selected for the contest "Best Scientific Work Performed in Russian Federation Ministry of Defense Military Educational Institutions." Their authors are cadets S. Geraskin, V. Rudykh, S. Mikhaylov, R. Fedorov and others.

It is very indicative that those subunits where there are more cadets who participate in the military science society also have higher indicators in studies.

[ARMEYSKIY SBORNIK] Then here is the last and possibly an unpleasant question for you. Does a cadet's desire to learn always coincide with his opportunities? Are there frequent separations of trainees from classes?

[Tsukanov] I will give a frank answer to a direct question, but first I would like to say this.

The school is that production mechanism which demands much everyday economic concern. I know that in many foreign armies students at military schools are not burdened with concerns about their everyday life.

But first of all, the Russian Army traditionally always believed that any commander must be able to do everything which a soldier is to do, and this is correct. Secondly, we clearly have insufficient personnel and means for performing fatigue duties. Moreover, as of today we are only at 35 percent strength in first-term privates and NCO's, and they are called up again as specialists for specific equipment.

This is why the separation of cadets still is preserved, not from scheduled classes, but basically from independent training. We are differentiating this process in every way both at the level of the school as well as in subunits. At least there have been no statements from cadets concerning a lack of time for studies.

At the conclusion of the conversation I wish to express the hope that our school very soon will hold a worthy place among the country's military educational institutions and that its graduates will carry the title of military engineer proudly.

SCIENCE. TECHNOLOGY. PROGRESS

Re-establishment of Tu-160 Regiment in Russia

94UM0591G Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 12, 68-69

[Article by Lieutenant Colonel S. Valchenko: "The Tu-160 Spreads Its Wings"]

[FBIS Translated Text] For two years now this airfield in the remote interior of Russia has been a subject of special concern of the Main Commissariat of the Russian Air Force. I believe that during that same time the interest in it became higher by an order of magnitude in corresponding departments of our former probable enemies as well (let me be forgiven for a supposition so seditious for times of "new political thinking"). Just how is this military installation noteworthy? Two years ago it gave shelter to winged, snow-white giants—Tu-160 strategic bombers—and the people who take them into the sky.

True, the Air Force garrison initially received only pilots, navigators, engineers and technicians from the former Poltava-Berlin, Guards, Order of Lenin, Red Banner Bomber Regiment. This Long-Range Aviation regiment alone, stationed at an airfield at Priluki, had Tu-160 aircraft in the inventory. These were the aircraft, numbering almost 20, that were unilaterally declared the property of Ukraine, and it was suggested that the aviators "rather quickly" take the new oath and await "golden mountains" and prosperity along with everyone else. Those who did not perceive good fortune, but trouble for the two Slavic peoples in such "sovereignization" and who did not take the new oath were discharged without another word. By the way, those proved to be the majority in the regiment.

It is unknown how the people's destinies would have shaped up subsequently had it not been for the firm position of the Russian Air Force Main Staff: the Tu-160, the world's most powerful strategic bomber, had to remain in the Russian Air Force inventory no matter what.

The first step on the path to implementing that decision was the suggestion to the Priluki aviators to travel to a new duty station. Many agreed, although they realized what they were heading for in leaving comfortable apartments without hope of receiving housing soon. What motivated them? Probably not in last order was the desire to serve a beloved cause and allegiance to duty and aviation (indeed, it is well that we still run across people and situations in our lives where one is not ashamed to use lofty words in telling about them).

Lieutenant Colonel A. Zhikharev, former commander of the bomber regiment and a First Class military pilot, was one of the first to arrive in the Russian garrison. Today Anatoliy Dmitriyevich already is a colonel and a pilot-sniper. He has trained several aircraft commanders. Many of his subordinates also have grown professionally

in service and in rank. Some at the new station already have taken part in several practice launches of long-range cruise missiles in taking their powerful aircraft into the sky.

By the way, about the aircraft. How did they appear at the Russian airfield? The fact is, Ukraine continues to retain 19 of the Priluki aircraft. Russian aircraft builders came to the rescue—the plant supplied several new bombers. Test organizations transferred some of the equipment to the regiment. Thus, beginning with one aircraft and a limited number of crews, there was the rebirth of an air unit that at one time was the basis of Soviet strategic aviation's striking power. Today Long-Range Aviation Headquarters believes that much already has been done for this rebirth. The Russian Air Force has combat-ready Tu-160 aircraft, and this is the weighty argument which the hottest heads hardly will begin to ignore.

And what about Ukraine? Unilateral privatization of the Tu-160 has not produced positive results for now. Bombers crammed with electronics immediately were "laid up"—no fuel or spare parts. And hopes are becoming fewer and fewer that the powerful aircraft will go into the sky at some time.

The dozens of pilots and navigators trained to the full extent in the combat training course can be considered one of the main results of two years of efforts by the Main Commissariat of the Russian Air Force and by the formation and unit command element. Another fact of no small importance is that technical crews for servicing the Tu-160 are at maximum strength for the present time. Ramp parking areas and servicing areas have been refitted. The ready room, where all conditions for full-fledged rest of flight crews have been created, also is beyond recognition. Behind all this is the labor of dozens of specialists—selfless labor for the sake of aviation, for the sake of Russia.

The trouble that is common to aviation today—shortage of fuel, expendables and spare parts—adds to the difficulties, but funds are allocated above all for maintaining a proper professional level of pilots and navigators. Practice launches of long-range cruise missiles, the last of which were conducted successfully in June, confirm that the aviators are capable of making full use of the enormous capabilities of the modern aircraft system.

These capabilities are such that they deserve a detailed narrative, although much already has been said and written about the "Russian air wonder," the Tu-160. What epithets and titles have not been bestowed on this giant! "Weapon of parity," "deterrence factor," and "twelve-bladed sword" (by the way, the aircraft received the latter name from the number of long-range cruise missiles it is capable of taking aboard). The West nicknamed the Tu-160 "Blackjack," possibly in honor of the elusive ship which entire squadrons could not stop, or perhaps comparing it with that cowboy, "Black Jack," who is better left alone.

The Tu-160 is an aircraft with variable geometry wing and a multiple flight configuration. At an altitude of 10-15 km it can develop twice the speed of sound. At the same time, this almost 300-tonne giant (by the way, ten Su-27 fighters weigh the very same) is capable of flying at minimum altitude near the ground in an automatic nap-of-the-Earth flight configuration.

Combat potential is practically unlimited. Any weapon system existing in the Air Force today and intended for a strategic bomber can be used on the Tu-160, from thermonuclear bombs and cruise missiles to ordinary aircraft bombs, including guided bombs. The cruise missiles being used permit the crew to launch without entering the enemy air defense battle zone.

The Tu-160 is fully comparable with a spacecraft in the nature of control of numerous onboard systems. Up to a hundred digital processors operate on board to help pilots and navigators. The degree of complexity of missions to be accomplished by the aircraft system clearly requires specialists of a special class, and I will repeat that the regiment has them.

Both in the garrison and in Long-Range Aviation Headquarters in Moscow I was told the names of dozens of people whose work and concerns preserved the most powerful strategic bomber for Russian aviation. Many of them put the first Tu-160's "on their wings" back in Priluki in the period of their test operation under line unit conditions. At that time, together with the test pilots, they flew to break world records more than once. For example, Lieutenant Colonel A. Medvedev, pilot-sniper, former aircraft commander and now senior inspector-pilot of the Long-Range Aviation Combat Training Directorate, has nine such record-setting flights. The Tu-160 holds more than 50 world aircraft records overall.

That which was done by flight and engineering-technical personnel at Priluki can without embellishment be called an exploit. But fate so ordained that basically the very same people would have to repeat this exploit; true, already in a new place, at an airfield which did not have the necessary special equipment, classrooms or simulators, and in the most compressed time periods. They coped with the mission. Despite all predictions by skeptics, who foretold that Russia would no longer have the Tu-160, the aviators returned it to the Motherland. And today Russian Tu-160's proudly spread their powerful wings in flight.

At the time the question was being decided whether or not we were to have Tu-160's, the Main Commissariat of the Air Force did not lose sight of the entire set of questions of combat readiness and combat training of this unit's aviators. Everything possible and even impossible was done to locate the funds necessary for building housing in this garrison. Local aviators shared what they could with the "Priluki refugees." As a result, dozens of families who arrived from Ukraine already have given house-warming parties. Much work and many plans still

lie ahead for aviators of the regiment headed by Colonel Zhikharev, but that which they already have succeeded in doing convinces a person that they are up to any tasks.

Bereg Shore Self-Propelled 130-mm Gun System

94UM0591H Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 70-71

[Article by Captain 2nd Rank I. Dubrovin: "Bereg Gun System"]

[FBIS Translated Text] In Russia, where maritime borders stretch for several thousand kilometers, much attention is given to creation of mobile shore batteries. They have indisputable advantages compared with fixed artillery systems, inasmuch as they provide a defense of a considerably greater sector and can move to combat positions while concealed from the enemy. In contrast to traditional self-propelled gun mounts in the Ground Troops inventory, mobile shore batteries have specialized control systems in their makeup intended for performing specific missions in firing against naval targets.

One innovation of the Russian defense industry is the Bereg shore self-propelled 130-mm gun system, with which it is possible to engage both large surface ships (including fast ones up to 200 kts) as well as small floating targets (fighting vehicles, tanks, small craft) used for landing an amphibious assault. This system is made up of six A-222 self-propelled gun mounts and a central station with a specialized fire control system.

The search for and tracking of naval and ground targets and adjustment of the self-propelled gun's fire are accomplished both by the central station's fire control system as well as from one or two observation posts or from an artillery observer helicopter. In addition, the self-propelled guns can fire autonomously, using their own optical-electromechanical sights, commander's observation and target designation devices, ballistic computers and laser rangefinders for obtaining target information. Such autonomous functioning of each of the six self-propelled guns substantially increases Bereg gun system survivability.

Work stations of the commander, gunner and four loaders are outfitted in the A-222's rotating turret. At the commander's work station are installed the unit controlling operation of all systems (conduct of fire, laying, ammunition supply, shell case removal, life support, fire extinguishing); the commander's electro-optical observation device with night channel; laser rangefinder; ballistic computer and plotting board for autonomous work; radio; equipment controlling internal and external intercommunications; and illumination, heating and ventilation equipment. The gunner's work station has an optical sight, light signaling unit, as well as equipment for illumination and internal communications. In case some obstacle ends up in the zone of fire, the gunner can take this circumstance into account by data input into the prohibited-fire-zone-coordinates input unit.

Work stations of the two forward loaders are organized at shell feed trays symmetrical to the bore axis. The rear loaders' places are at battle stowages and their loading device. Here there are two stowages for storing and transporting at least 40 rounds. There is a special compartment next to the rotating turret on the motor vehicle chassis which accommodates the power unit for driving two electromechanical boosters of the gun laying system, a dc generator for powering the jacks giving the chassis rigidity during firing, and also storage batteries and power supply, laying and fire control system units.

In addition, a ventilator is installed in this part of the turret which reduces gas contamination of air in the process of firing. Air intake is through a pipe raised above the roof.

The A-222 self-propelled 130-mm gun installed in the rotating turret permits firing against an amphibious assault in a broad sector of +/-120°. The gun is laid in the vertical plane in the range from -5 to +50°.

The Bereg system central station consists of the BR-136 fire control system with radar and electro-optical target tracking channels, and also auxiliary equipment for communicating with system vehicles and maintaining normal conditions for personnel habitability. The BR-136 system provides radar or television-optical scan of the surface situation all around (or in a given sector) at any time of day. Its operation is possible not only in the presence of natural interference, but also in case of organized enemy jamming. Up to four radar-observed targets are tracked automatically, and two can be engaged simultaneously. After a target has been engaged, the control system permits shifting fire of the A-222 self-propelled gun essentially instantaneously to the next target among those being tracked.

To determine motion of tracked targets, the control system computes full angles of laying for six guns in the central laying mode with consideration of ballistic and meteorological corrections, and also each gun's distance from the central station. There is full automation of all processes of determining parameters, including automatic adjustment on radar-observed blips from projectile explosions.

The system's fire control channels operate in several modes: survey of system elements, against naval targets, or against shore targets. The BR-136 supports fire of the self-propelled guns both in single salvos as well as with a rate of fire of 4, 6, 8, 10 and 12 rounds per minute.

The central station's van is divided inside into five compartments: engine, antenna station, high-frequency, radio operator, and operator. The engine compartment contains a diesel electric unit for reserve power (in the absence of power from the alert-duty support vehicle or from centralized power supply networks) at a nominal output of 30 kw of three-phase, 50 Hz ac and a voltage of 380/220 volts with insulated neutral; and a vehicular converter with secondary voltage of 220 volts, 400 Hz and 15 kw of output for powering the fire control system.

Transceiver devices of the control system—all-around looking radar antenna with its own rotation drive and also the rangefinding-sighting device of the electro-optical target acquisition and tracking channel—are installed on an extensible base in the antenna station compartment.

The transmitter, polarization control device and device for maintaining waveguide pressure are accommodated in the high-frequency compartment, which has special shielding against SHF emissions and a special shielded door. In the radio operator compartment is a preprocessor, SHF receiver, digital computer and equipment for the radio telegrapher and driver-electrician work stations.

The operator compartment accommodates work stations of the Bereg system commander, central station commander, control team first sergeant, gun electrician and gun radar operator. The central station commander's work station is equipped with the first fire control channel device and equipment for communicating with the gun mounts. Similar equipment for supporting firing of the self-propelled guns based on data of the second channel is accommodated at the control team first sergeant's work station. Redistribution of guns by fire control channels can be arbitrary.

When the central station is deployed on uneven terrain, special jacks are used by which the crew can make the antenna rotation plane level. Inasmuch as the jacks have not only electromechanical, but also manual drives, a crew is capable of placing the central station in a horizontal plane even in an emergency situation.

The Bereg system includes an alert-duty support vehicle to supply all vehicles with uninterrupted, stabilized electrical power. It includes a removable power supply unit with two 380/220 volt, 50 Hz ac diesel electric units, each with an output of 30 kw. Fuel tank capacity is designed for continuous operation of diesel units for seven days. In addition, the great capabilities put into the design of the alert-duty support vehicle also permit using it for other purposes. Thus, the turret machinegun mount with 7.62-mm PTK machinegun installed on the roof gave a good account of itself in organizing close-in defense of the vehicle. The presence of special equipment and navigational gear in the van gives the crew timely warning of radiation and chemical contamination and supports reliable movement of the system (or some of the vehicles with their dispersed displacement) to any given area. The convenient two-place and four-place compartments facilitate good rest for personnel of the entire system based on a sliding schedule.

Bereg system vehicles are mounted on one type of MAZ-543 motor vehicle chassis with improved off-road capability and with an 8x8 wheel arrangement. This, as well as the presence of night vision devices and navigational gear, permits vehicles to change the firing position quickly after executing a combat mission and displace to a new area in a dispersed manner in the presence of active and passive jamming at any time of day and in any weather conditions.

Maximum acquisition range of surface targets, km	Over 35
Time for placing in combat readiness, min	Not over 3
Caliber, mm	130
Rate of fire, rounds/min	At least 10
Range of fire, km	At least 20
Basic load of rounds carried	At least 40
Type of round	Ready-to-use
Type of projectiles	Fragmentation-HE with base fuze; antiaircraft with nose fuze; practice (for practice firing); and training, for training the crew and checking equipment

Modern Fighter Lidars

94UM0591I Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 72-74

[Article by Lieutenant Colonel S. Reznichenko]

[FBIS Translated Text] Optical radars were created for our fighter aircraft by the Geofizika Scientific Production Association over two decades ago. Such technical devices as the KOLS [lidar] for the MiG-29 and the OLS-27 for the Su-27 until recently have had no analogues abroad not only in series models, but even in prototypes. Certain foreign specialists assess this fact very skeptically, asserting that an absence of analogues indicates the absence of development prospects. But the high evaluations of Russian aircraft combat qualities received at international air shows and backed up by comments from pilots of many countries' air forces refute this opinion.

The KOLS is part of the S-31 electro-optical navigation and targeting avionics created especially for the MiG-29 family of fighter aircraft. In addition to a laser channel, the set also has a thermal direction-finding channel. The set is for searching for and acquiring maneuvering and nonmaneuvering airborne targets in their rear hemisphere and for improving effectiveness of engagement when firing the cannon and launching missiles against them. The KOLS also improves accuracy of employing aircraft weapons against ground targets, for which onboard digital computer software is augmented with bombing and firing algorithms.

Designwise the set is made in the form of a sealed monobloc, where the optics and their electromechanical drives are contained in a nitrogen-filled medium. The KOLS equipment is concealed beneath the fighter cowling, and only the sighting head scanner, protected by a transparent dome made of a special grade of glass, gives the aircraft specific outlines.

Systems of the IR channel section are accommodated in the same monobloc and use a scanner common with the laser. Experience has shown that in certain instances the sensitivity and resolution of IR systems support acquisition of airborne targets at ranges considerably exceeding those guaranteed in the specifications and performance characteristics. Synchronous operation of both channels ensures the highest protection against natural and deliberate interference. The set can track targets stably because of the optimally selected spectral range, the optical system parameters and special signal processing in the electronic section.

Processing of data coming simultaneously from the KOLS and from the onboard radar considerably expands functional capabilities of the aircraft weapons aiming system. This does not preclude use of the optical radar in an autonomous mode.

The combination of accuracy in measuring target coordinates, range and absolute angular velocity of the line of sight using the KOLS, and the technical dispersion when firing the GSh-301 cannon permits hitting an airborne target with one salvo of 3-6 rounds. When firing against ground targets at a distance of 1,500 m, 50 percent of rounds fired from the cannon will fall within a circle 9 m in diameter, or 10.5 m when firing free-flight rockets.

Already today an ergonomic problem is presented by the saturation of modern fighters with numerous technical devices, while the crew size which has become classic has been preserved. If decisive steps are not taken in this area, then in the very near future a pilot will not have enough hands or fingers on them for controlling all flight and combat systems. At the same time, the optical radar is one more addition to the architecture of navigation and targeting avionics. Nevertheless, coupling the set with the Shchel-ZUM helmet target acquisition system enables a pilot to give the KOLS a "sighting bisectrix" by turning his head in the necessary direction. Manual controls are used only in selecting the set operating mode. In the opinion of specialists, this is especially important when conducting close-range, maneuvering combat, when the pilot's hands are engaged in flying and his body is experiencing enormous g-loads.

The developing firm also manufactures a set of test equipment for technical servicing of the KOLS by Air Force ground personnel, which permits conducting the entire cycle of adjustment work prescribed under Army conditions.

A new modification of the MiG-21 aircraft with the KOLS installed in it presently is being studied together with the MiG Aircraft Scientific-Production Complex imeni A. I. Mikoyan. In this case an aircraft regarded as obsolete but which has come to be loved by pilots is acquiring new qualities. At one time the U.S. F-4G Phantom-2 fighter was reanimated, receiving a few more years of life thanks to replacement of the old onboard radar with the modern AN/APG-65. Being the same age, the MiG-21 is laying claim to a considerably longer life.

In another development based on the KOLS, it is planned to use a new cooled photodetector whose principle is based on a thermoelectric effect. Such an optical radar will become part of a mobile ground direction-finding system for protecting objects from attack by precision weapons and ballistic missile warheads.

One other optical radar, the OLS-27, functionally is part of the Su-27 fighter radar aiming system and is used both autonomously as well as together with the onboard radar. In contrast to the KOLS, it can be used not only in close-range maneuvering combat, but also long-range missile combat. The primary tasks of this set are a search for and all-aspect acquisition of airborne targets, and their lockon and tracking based on thermal emission around the clock and in any weather conditions. At the same time, the OLS-27 provides for the measurement and output of current coordinates of the airborne enemy and measurement of target range.

The set is close to the KOLS architecturally, although creators of the OLS-27 had to make its design more complex to satisfy all the client's specifications and performance characteristics. Characteristics of the IR channel have been improved, inasmuch as the passive principle of direction-finding of targets improves concealment of combat operations. Designers succeeded in achieving higher accuracy in direction-finding of targets compared with radar equipment, and also a range comparable with radars in certain scanning modes. These advantages are based on the chosen emission band used, the material and geometry of the photodetector's sensitive layer, parameters of the optical scheme which were used, an original design of precision position sensors, and optimum algorithms realized in the computer system for processing initial data.

The radar does not provide sufficient accuracy for aiming against ground targets when employing missile and machinegun-cannon armament. But the optical radar not only competes successfully with it here, but also broadens combat capabilities of the fighter aiming system right down to bombing and firing free-flight rockets against ground targets, and it also improves the effectiveness of cannon fire against airborne targets.

Despite the fact that functional capabilities of the OLS-27 have been increased considerably, this did not entail increased complexity in its control system. On the other hand, when the pilot turns his head now, the sighting head of the lidar and thermal direction-finder, the radar antenna system, and tracking seekers in missile homing heads turn in the very same direction. And the widely developed software permits automating the operation of the OLS-27 and reducing its control to a set of very simple standard operations.

A few years ago the famous mock battle in the Oklahoma sky in the two-seater Su-27UB and F-15D Eagle aircraft flown by joint Russian-American crews went down in the history of Russian aviation. Its outcome demonstrated our aircraft's indisputable advantages. And it should be noted especially that the Russian Su-27 conducted the "engagement" absolutely without use of the onboard radar, whose functions were successfully replaced by the OLS-27. The result was simply stunning.

Technical Characteristics of Optical Radars

Indicators	KOLS	OLS-27
Field of view, degrees	60x30	120x75
Search field, degrees	30x30	20x5
Target acquisition range in rear hemisphere, km:		
at aspect up to 1/4	30	50
at aspect up to 3/4	15	No data
Target acquisition range in forward hemisphere, km	No data	15
Range of distance measurement, km	0.2-3	0.3-3
Measurement errors:		
range, m	10	10
angular coordinates, angular min	9	5
angular speed, %	1.5	No data
Angular speed of tracking, deg/sec	30	25
Weight, kg	61	150

In conclusion it should be emphasized that optical radars permit performing missions not just as applied to combat systems; with their help it is possible to determine with high accuracy the location of various objects having a temperature contrast relative to the background. This is why functional capabilities of optical radars are constantly being broadened, as confirmed by projects being proposed by the Geofizika Scientific Production Association in accordance with the conversion program, and by the models already finished.

TP-82 Survival Pistol

94UM0591J Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 74-75

[Article by Engineer K. Smekayev, State Prize laureate: "TP-82 Triple-Barrel Pistol"]

[FBIS Translated Text] This weapon and the three kinds of cartridges for it, developed by specialists of Tula Armory and TsNIItochmash [Central Scientific Research Institute of Precision Machinebuilding], became operational with the USSR Air Force in 1986. The TP-82 pistol is part of the portable emergency survival kit of spacecraft and aircraft crews and is intended for giving signals, protecting against predatory animals and obtaining food after coming down on land or water on uninhabited terrain. It has two smooth barrels and one rifled (lower) barrel, each 300 mm long. The first two are for firing shotgun (SN-D) and signal (SN-S) cartridges, and the last one for firing a special 5.45-mm bullet cartridge (SN-P).

Basic Characteristics of Cartridges

Indicators	SN-P	SN-D	SN-S
Muzzle velocity, m/sec	800	300	200
Maximum pressure, MPa(kg(f)/cm^2)	294.2 (3,000)	132 (1,350)	31.4 (320)
Range of effective fire (or height of ascent of signal charge), m	Up to 200	Up to 35	165
Cartridge length, mm	55.8	70	70
Cartridge weight, g	10.7	36	28.5
Bullet (projectile) weight, g	3.6	20	12
Type projectile	Steel-core bullet	No 3 shot	Pyrotechnic charge
Make of powder	SSNO30/3.69	Sobol	DRP-2

The barrels can be fired in any sequence, and three rounds can be fired using only one hand. The trigger mechanism has two external hammers and one trigger. The pistol is equipped with a removable stock consisting of a machete and case with a butt plate for resting against the shoulder. Fire can be conducted both with or without the butt connected. It weighs 2.4 kg. The machete, used as a slashing means if necessary, permits making a foot path in undergrowth, cutting firewood and construction materials for shelter, and digging ditches and pits. It weighs 0.8 kg.

The 12.5-mm SN-D shotgun cartridge is equivalent in characteristics to the 15.9-mm standard hunting cartridge with No 3 shot used in shotguns with a barrel length of 700 mm. The red signal given using the SN-S cartridge can be detected at a distance of from 5.5 to 9 km during the day and within line of sight at night. The signal charge burns for 8-11 seconds. The casualty radius of the SN-P bullet is 8-10 times greater than that of the 7N6 5.45-mm cartridge bullet. The probability of the weapon's faultless action is 0.9999 when firing the bullet and shotgun cartridges and 0.994 when firing the signal cartridge. The factors of space flight and extreme conditions of various climatic zones have no effect on the pistol's reliability. It has no analogues in effectiveness.

Russian Air-to-Surface Guided Missiles

94UM0591K Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 76-77

[Article by Engineer N. Yakubovich: "Air-to-Surface Guided Missiles"]

[FBIS Translated Text] Missiles of this class are part of the weapon system of modern aircraft and helicopters. In the opinion of military specialists, missiles created in the Zvezda Experimental Design Bureau possess high combat capabilities. This previously completely closed enterprise demonstrated its military products for the first time at the Mosaeroshou-92 International Exhibition.

Kh-66 air-to-surface missiles became operational with the Air Force in 1968 and were employed on fighter aircraft. Subsequently Kh-23 missiles with a radio command guidance system and Kh-25 with laser guidance system were developed on their base. In improving the Kh-25, for the first time in domestic practice Experimental Design Bureau specialists created the modular missiles Kh-25ML with semiactive laser homing head, Kh-25MP with passive radar homing head and Kh-25MR with radio command guidance system. They became operational in 1981. Their common assemblies are the PRD-276 solid-propellant engine, SUR-73 autopilot, F-27 fragmentation-high explosive warhead, power unit, wings and control surfaces with drives. The Kh-25ML is intended for engaging small ground targets (armored equipment, command posts, SAM system launchers and AAA systems). Both aircraft as well as ground target-illumination sets are used for its guidance.

The Kh-25MP is used to engage various types of radars, including those which are part of enemy SAM systems and AAA. Its homing system provides high accuracy day or night under all weather conditions. The Kh-25MR is for engaging surface ships, including under conditions of heavy electronic countermeasures.

In the late 1970's Zvezda Experimental Design Bureau developed two supersonic, all-weather missiles, the Kh-31A and Kh-31P. The first is for combating enemy ships in the presence of electronic countermeasures with its launch in a standoff mode. The second is used to engage operating medium and long range SAM system radars (including the Patriot SAM system), as well as radars for control and warning of air defense weapons. The missiles have an integrated propulsion system consisting of a ramjet engine and solid-propellant booster unit located in its combustion chamber. They are launched from an aircraft with the help of the AKU-58 aircraft catapult. The missile is thrown downward along the flight heading and accelerated to a given speed by the booster unit. Then the unit is disconnected and the flight is made with the ramjet engine. To protect the power plant from entry of foreign objects, missile air intakes are covered with end caps that separate at launch.

Characteristics	Type Missile					
	Kh-25ML	Kh-25MP	Kh-25MR	Kh-31A	Kh-31P	Kh-35
Launch weight, kg	300	300	320	600	600	600
Warhead weight, kg	90	90	90	90	90	145
Launch range, km	20	10	40	50	>100	Up to 130
Flight speed, m/sec	850	860	900	-	-	-
Length, m	3.6	3.6	4.2	4.7	4.7	4.4
Diameter, m	0.275	0.275	0.275	0.36	0.36	0.42

Kh-31 family missiles presently are being improved. It is proposed to create an air-to-air missile with passive-active radar guidance supporting the engagement of AWACS early warning radar aircraft and other poorly maneuverable aircraft. A version of the air-to-surface missile is being developed with active radar guidance for engaging surface targets in the presence of electronic countermeasures.

The new Kh-35 general-purpose antiship missile is of special interest. It is for engaging naval targets in the presence of heavy electronic countermeasures with launch outside the enemy air defense battle zone. A turbojet engine supports its high-speed flight to a range up to 130 km. Because a radioaltimeter is used in the control system, the Kh-35 can cover the terminal phases of flight at superlow (3-5 m) altitudes. The missile is launched from platform aircraft using the AKU-58 aircraft catapult, and from helicopters by jettisonable solid-propellant boosters. This same method is used when launching the missiles from ships and self-propelled shore systems.

Moscow Scientific Conference on World War I

94UM0591L Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 78-79

[Article by V. Zmeyev, docent, candidate of philosophical sciences: "Scientific Conference"]

[FBIS Translated Text] At the initiative of the Russian Academy of Sciences, an international conference was held in Moscow in May 1994 on the subject "World War I and the 20th Century," in which scientist-historians and military specialists took part from Russia, Belgium, Great Britain, Italy, Macedonia, United States, France, Ukraine, Sweden, FRG and Yugoslavia. The Russian Federation Ministry of Defense Military History Institute also was among the organizers of this science forum.

The scientific conference, held in the year of the 80th anniversary of the beginning of World War I, gave a reminder of that war's colossal effect on all subsequent development of human civilization. With the Great War, as it was called at the beginning of the present century, begins the chronology of a historical period marked by very profound shocks in the world—revolutions, processes of formation and disintegration of empires, and the opposition of democracy and totalitarianism.

It was the first time an international conference of that level was held in our country on problems of World War I. Those assembled were greeted by Russian Academy of Sciences Vice President Academician V. Kudryavtsev, Russian Academy of Sciences Academician P. Volobuyev, Russian Academy of Sciences corresponding members A. Sakharov and A. Chubaryan, as well as S. Romano, a professor from Italy.

There was a lively discussion at plenary sessions in the sections "New History of the Great War: A Change of Paradigms," "International Relations and the Regrouping of World Forces" and "War and Society." Over 60 researchers gave reports.

The "Belligerents' Armed Forces and Intelligence in the War Years" section, directed by scientist-historians V. Kaftaradze (Russia), N. Popovich (Yugoslavia) and J. (Heigelir) (Belgium) worked very productively. The reports of our own military historians generated interest: A. Zhilin—"Military-Strategic Plans of the Entente in the Summer of 1917"; K. Shatsillo—"Roots of Crisis of Russian Army Arms at the Beginning of World War I"; A. Shishov—"The Caucasus Front During World War I"; and L. Yakovlev—"Quadruple Alliance Intelligence and Russian Counterintelligence in World War I."

It was emphasized in the course of discussions that World War I bore an exclusively destructive nature and exceeded all wars that preceded it for 125 years in the number of human victims and material losses. During the war, which lasted more than four years, around 10 million of the overall 74 million persons mobilized were killed or died of wounds and over 20 million were wounded. Human life was cheapened and society's moral-ethical foundations collapsed.

A number of reports pointed out that world society bore colossal military expenditures, which by war's end reached $208 billion (in prices of that time). The large armies and growing needs for combat equipment generated the unprecedented development of defense sectors of industry and transition of the entire economy of belligerent countries onto a wartime footing. In 1917 more than 50,000 enterprises employing around 20 million workers were operating in the world for producing various items of armament and supply of armies.

The Moscow international conference opened up new pages of that terrible war and enabled gaining a deeper understanding of its historical significance for the destinies of Russia and other states of the world community. Russian and foreign scientists came to an agreement on further cooperation in researching pressing problems of the history of World War I. Such interworking will permit increasing the potential of domestic historical and military science and drawing objective conclusions for the future from the tragic events at the beginning of the 20th century.

FOREIGN MILITARY AFFAIRS

Chemical, Biological Weapon Capabilities on Korean Peninsula

94UM0591M Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 88-90

[Article by Senior Lieutenant Yu. Ishkov, junior scientific associate of Scientific Research Institute of NBC Defense Troops: "Korean Peninsula: Chemical and Biological Secrets on Both Sides of the 38th Parallel"]

[FBIS Translated Text] *An event which the world public had been awaiting impatiently occurred in Paris on 13 January 1993. Many years of work in preparing the comprehensive Convention on the Total Prohibition of*

Chemical Weapons was crowned with success. But far from everyone evaluates this document's real legal force optimistically, and there are several reasons for this.

First of all, there are historical facts confirming a violation of similar agreements—the Hague Conventions of 1899 and 1907 and the Geneva Protocol of 1925. Despite the obligations assumed, certain states used chemical agents more than once on the battlefield in many armed conflicts, especially during World War I, and as a rule they did not incur serious liability for what they did.

Secondly, according to data of the Stockholm International Peace Research Institute, there presently are more than 20 countries on the planet having something to do with chemical weapons. While the United States and Russia declared this officially and Iraq and Iran "exposed" themselves in the war against each other, many other countries (Bulgaria, Burma, China, Egypt, Ethiopia, France, Hungary, Indonesia, Israel, Laos, Libya, North and South Korea, Romania, Republic of South Africa, Syria, Taiwan, Thailand, Vietnam) are suspected of possessing certain reserves of chemical agents or of a desire to acquire them. And the most dangerous thing here is that a number of states, particularly Syria, Iran and Libya, are not attempting to adhere to the Convention for now and motivate their behavior by the complicated foreign-policy and military situation around them. Matters are no simpler in one other tense area of the world—on the Korean Peninsula. The survey on this subject was prepared by Senior Lieutenant Yu. Ishkov, junior scientific associate of the Scientific Research Institute of NBC Defense Troops, based on domestic sources and foreign press materials.

U.S. analysts have been keeping a chronicle of weapons of mass destruction in this region since 1954. It was then, in their opinion, that the Soviet Union and China transferred certain special technologies as well as chemical agents and means of protection against them captured from the Japanese and Kuomintang militarists[1] during World War II to the Korean People's Army [KPA].

The very next five-year period was marked by the swift development of the DPRK chemical industry. But despite the fact that the country possessed considerable deposits of natural raw materials, it proved to be a rather difficult task to create its own capacities for producing chemical weapons. It was necessary to turn to the eastern neighbor for help.

In 1964 the DPRK concluded a contract with Japan for deliveries of agricultural chemicals. Under their guise, components came into the country initially for synthesis of tabun and mustard gas, and a bit later chlorine and phosphorus-containing organic compounds came in. In the conclusion of international experts, they fully could find application in the technology of producing nerve agents and agents with a general toxic effect.

The dynamics of imports are interesting and permit judging, albeit indirectly, how the DPRK government attitude changed toward problems of chemical arming of the KPA. Its overall scope was 1.6 million tonnes in 1976 and 3.1 million already in 1979, then it began to decline and did not exceed 0.2 million tonnes in 1984. According to certain data (albeit not indisputable), the USSR also allocated a small quantity of chemical agents in finished form for its Korean friends in the early 1970's.

A U.S. Defense Intelligence Agency account "North Korea: Foundation of Combat Might," compiled as of 1991, states that in the northern part of the Korean Peninsula there are at least eight industrial enterprises at which chemical agent production is possible. Mentioned among them are installations near the cities of Chongjin, Hamhung, Yonan, Hungnam, Kusong, Pyongyang, Sunchon and Nampo, which at the same time also are centers of the DPRK chemical industry. Presumably, sarin, tabun, phosgene, adamsite, prussic acid and a family of mustard gases, comprising the basis of KPA chemical weapons, are produced here.

The account noted that means of delivery are represented basically by mortars, tube artillery and MLRS, including those installed on fast craft. Both aircraft and the FROG-5 and SCUD-B missile systems, which were delivered by the USSR, which were produced in the country under license or which were purchased in Iran, also are not excluded.

Chemical mines, projectiles with a caliber over 107 mm, missile warheads and aircraft spray units for them were made chiefly in the 1980's. In the assessment of U.S. intelligence services, their reserves, accommodated in 170 mountain tunnels, are approximately 180-250 tonnes.

Certain sources also mention the fact that the DPRK has been working no less actively also on biological weapons since the mid-1960's. Around ten disease pathogens such as anthrax, cholera, bubonic plague, smallpox, yellow fever and others were studied most scrupulously. The work was done at the National Defense Research Institute and Medical Academy (NDRIMA). A bit later, the possibility of their use in military operations was examined in strategic exercises and command and staff games. It is fully likely that by this time NDRIMA already had obtained a limited amount of biological cultures, although experts do not exclude the presence of experimental production and even of an entire experimental plant. By their supposition, North Korean biologists are cooperating closely with Syrian colleagues at the present time.

The KPA also takes just as responsible an approach to defense against mass destruction weapons. Individual protective gear, basically of Soviet and partially of Chinese production (Series ShM and Type-65 protective masks with facepieces, OZK and M-66 protective clothing) have been accumulated in sufficient quantities. There also are Soviet decontamination sets, including the IPP [not further expanded]. There are no special

reconnaissance vehicles in the KPA, and so chemical warfare scouts equipped with the PKhR [chemical detection device] and other standard gear perform their missions in Sungni-58/61 trucks.

Lecture classes as well as practice drills using chemical agent simulators are held with Army personnel and reservists at least 4-5 times a year. The complete training course of a chemical warfare troops specialist is 760 hours, of which 400 are for mastering reconnaissance and decontamination techniques.

There are around 9,900 military chemical warfare personnel in the KPA, which is 1.2 percent of all personnel. The North Korean Armed Forces are in 3rd place in the world according to this parameter. Structurally the directorate of the chief of chemical warfare troops includes four departments: armament, training, research and industry, and chemical.

The first engages in determining the requirement for and procuring and storing chemical weapons and gear. It has a number of subordinate subunits and at least ten depots: a central depot and one for each army corps.

The training department organizes combat training of chemical warfare units and subunits as well as specialist training. It coordinates with other entities of the directorate on a number of questions and directly oversees the chemical warfare school, officer schools and training regiments, particularly the Hungnam Chemical Engineering College, which trains officer cadres for chemical warfare troops and at the same time performs functions of an NBC center.

The department of research and industry coordinates and directs the activity of scientific research establishments and industry. It is broken in turn into three subdepartments—nuclear, chemical and biological. Each has RDT&E subunits and industrial production organizations.

The chemical department develops the strategy of Armed Forces defense against mass destruction weapons and doctrinal provisions for employment of chemical warfare troops, draws up the combat training plan for them and is responsible for their mobilization and combat readiness. Therefore this department acts as a directive agency with respect to all chemical defense units and subunits, and as an executive agency in the technical support area. In addition, department officers advise the chief of the General Staff on problems enumerated above.

The chemical department has at its disposal two units of central subordination. The chemical repair battalion performs technical servicing and repair of sophisticated protective systems. The chemical defense regiment, consisting of a headquarters, 2-4 chemical defense battalions, a chemical reconnaissance battalion and service subunits, is in constant readiness both in peace as well as wartime to perform missions under the plan of the directorate of the chief of chemical warfare troops.

The army corps has a chemical defense battalion, the division has a chemical defense regiment and the regiment or separate brigade has a chemical defense platoon. All are subordinate to the corresponding chief of the chemical warfare service.

With respect to South Korea, information about its chemical arsenal is extremely limited. Evidently the fact that this country continues to remain a U.S. military ally tells. Nevertheless, a number of international experts regarded the declaration of the South Korean foreign policy department about the total absence of chemical weapons in South Korea with a certain share of skepticism. In the assessment of Russian Federation Foreign Intelligence Service analysts, the southern part of the Korean Peninsula has the necessary industrial potential for producing individual chemical agents.

The picture with respect to biological weapons also is contradictory. In the absence of reliable data, there are individual signals permitting certain conclusions to be drawn. Since 1981 the government has supported and stimulated with major bank loans a program for accelerated development of the domestic bio-industry.

Research in this area is conducted by scientific and university establishments, mostly together with U.S. military medical centers located on the country's territory. In 1985 the South Korean Association, which handles problems of genetic engineering, numbered 19 companies, which invested $15 million in corresponding RDT&E. Technologies and production capacities now being used for obtaining vaccines can be reoriented covertly for creating potential agents of biological weapons if necessary.

Recently (in response to the unremitting threat of North Korea's use of chemical agents) a modern mobile NBC-reconnaissance system on the chassis of the KIFV army fighting vehicle (see photo [photo not reproduced]) was accepted for delivery. It differs from the base vehicle by a more powerful power plant, increased gastight sealing because of the absence of ports along the sides, and a changed rear door design, on which a device for taking samples has been mounted. To the left of the door is a small observation window intended for viewing the rear hemisphere.

The vehicle crew is relatively large—five persons. Nevertheless, the reconnaissance process is almost completely automated. This is because special equipment is represented by modern instruments: the German MM-1 mass spectrometer with small "reconnaissance" wheels, U.S. KM43A1 gas alarm, U.S. AN/VDR-2 radiometer-dosimeter, a sampler, weather equipment, and a set of marking signs. Comfort is provided to personnel by a collective protection system creating an overpressure within the armored vehicle and purifying contaminated air using purification filters. The installation of air conditioners is possible.

Individual protective equipment for the South Korean Army is purchased abroad only in small quantities; the bulk of it is made in country. In particular, the Seoul Daewoo Company completely fills Ministry of Defense orders for protective masks.

Two types are manufactured. The first is the KM9A1, a licensed analogue of the U.S. Marine Corps protective mask. Its set includes the M11 respirator filter canister, which can be placed both on the right as well as on the left side depending on a serviceman's physiological features. The M9 helmet facepiece is made in three sizes and is a protective hood. A goggle assembly with double lenses for preventing fogging, cheek pads, and a plastic respirator filter canister with four plastic valves are mounted in it. When worn on the head, it is held in place by straps. The KM9A1 together with carrying pouch does not exceed 1.2 kg.

The other protective mask, K1, is made under West German documentation, but with a modified assembly for attaching the respirator filter canister. Its facepiece is distinguished by a flat panoramic vision window with nonfogging films, an intercom, and an assembly for drinking water. Aerodynamic properties of the filtering and absorbing systems are recognized as acceptable. This permits being in the protective mask for a lengthy time without noticeable signs of fatigue.

Footnotes

1. It is difficult to consider this fact reliable inasmuch as Soviet military specialists who were working in the DPRK at that time do not confirm it—*Ed.*.

Survey of Foreign Multiple Launch Rocket Systems

94UM0591N Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 91-93

[Article by Lieutenant Colonel V. Gogin and Captain A. Fedoseyev]

[FBIS Translated Text] Multiple launch rocket systems [MLRS] are capable of delivering surprise, massed strikes against personnel and military equipment concentration areas and they provide a high density of fire and high degree of damage of group targets. Modern systems are mobile and relatively simple in design and servicing.

In the opinion of foreign specialists, the MLRS which became operational in the United States in 1983 is the most sophisticated. They believe that up to the year 2010 it will be common not only to the U.S. Army, but also to armed forces of European NATO countries as well as of certain Asian and African states. The MLRS consists of a self-propelled launcher, onboard control equipment, free-flight rockets in expendable transport-launch canisters and a loader/transporter.

The launcher has the launcher proper and running gear. The first includes a metal box frame with reloading mechanism accommodated on a gyrostabilized, rotating platform; elevating and traversing mechanisms; and a system for launching free-flight rockets. Reloading is done by one person in 5-6 minutes. The other part is the chassis of a general-purpose tracked transport created on the basis of the U.S. M-2 IFV. The commander, operator and driver are accommodated in the armored cab. Here too is communications equipment and fire control gear, by means of which launcher coordinates are determined and firing calculations made.

The free-flight rockets used in the MLRS consist of a cluster warhead and a single-stage, solid-propellant motor with cruciform fin assembly that opens in flight. The warhead can be multipurpose or antitank. The multipurpose warhead has a caliber of 227 mm and is intended for engaging personnel, weapons, armored vehicles and other targets at a range up to 30 km. It is equipped with 644 M77 shaped-charge/fragmentation cluster submunitions (each weighs 0.23 kg), capable of penetrating homogeneous armor plate 70 mm thick.

Antitank warheads with a caliber of 240 mm can be of two types. The first warhead is equipped with 28 AT-2 antitank mines (armor penetration of the mine, weighing 2.3 kg, is 160 mm), and the second warhead uses six SADARM self-aiming cluster submunitions, each weighing 14.5 kg and 195 mm long. They are capable of penetrating homogeneous armor plate 100 mm thick. Their hit probability on a tank-type target is 0.3-0.5.

The modernized MLRS can launch the ATACMS tactical missile, which has a range capability of 135 km. Its warhead contains 1,000 M74 antipersonnel cluster submunitions.

Preparation of initial data for firing and for fire control of the MLRS is accomplished by the FDS system, which is in the inventory of the firing battery (nine launchers) and battalion (27 launchers). The great range of the rockets dictates the need to acquire a target at maximum range with requisite accuracy. With consideration of this it is assumed that it is most effective to use the MLRS together with small, remotely piloted vehicles [RPV], which will perform aerial reconnaissance and target designation. Thus, it is planned to have two MLRS batteries and an RPV battery with KZO acquisition gear in the MARS (MLRS) battalion in the structure of the FRG Army.

According to foreign press information, specialists are working to upgrade the MLRS. They plan to increase the range of fire through use of high-energy rocket fuels and lightweight warheads (because of this, for example, the maximum range of the M77 rocket was increased from 32 to 46 km). According to a forecast, the range of fire may reach 60-70 km after all modifications.

To reduce the probability of error in preparing initial firing data, a mobile FIELDGUARD system is attached to each MLRS battery along with the organic fire control system. The fire control system determines ballistic data

for a single sighting launch made before a general salvo, and the FIELDGUARD system locks onto the rocket, tracks it and transmits its flight coordinates to the computer. Necessary corrections are determined based on a compilation of calculated and actual trajectories. Based on the result of the sighting round, the system outputs data on actual conditions for conducting fire, and so it can be adjusted quickly and accurately. The new version of this system, MARK-2, has a higher data processing rate and longer range.

Work continues on creating different types of cluster warheads (antitank TGW equipped with three TGCM homing cluster submunitions; high explosive; with homing antihelicopter mines; and with homing BAT munitions for engaging armored equipment). A prototype of the AFATDS fire control system is undergoing tests. It will considerably surpass TACFIRE, which is in the inventory, in characteristics.

In the opinion of foreign military specialists, the MLRS will be the main weapon in the structure of reconnaissance-fire complexes being created, one mission of which is to conduct counterbattery fire.

Work was done actively in the FRG in the 1980's to perfect the LARS-1 110-mm MLRS. The new system, named LARS-2, is mounted on the MAN4620 seven-ton vehicle with improved off-road capability (it is equipped with a turntable for these purposes). LARS-2 is equipped with RELAG-2 devices for checking the technical condition of free-flight rockets and fire control.

Free-flight rockets for LARS-2 have been created with different types of warheads, including a cluster warhead containing five AT-2 antitank mines, a ranging warhead fitted with a radar reflector, and a smoke warhead. The projectiles have a powerful solid-propellant rocket motor, which permitted increasing the maximum range of fire from 14.7 to 20 km. The MLRS is used together with the FERA fire control system (one system for four launchers), which improved fire accuracy by 65 percent. The FERA equipment is mounted on a MAN4610 five-ton vehicle.

The FIROS-30 MLRS is in the Italian Army inventory. It consists of a launcher, F-30 122-mm free-flight rockets, and a loader/transporter. The launcher proper contains two interchangeable banks, each with 20 launch tubes, hoisting and traversing mechanisms, and the projectile launch system. It can be mounted on a truck with improved off-road capability, a trailer or a tracked armored transporter. Maximum range of fire is 34 km.

Two versions, standard and automated, are envisaged for completing the launcher with control devices. The second version additionally provides a navigational instrument (topographic surveyor) and ballistic computer, which are interfaced with the automatic control console in the launcher cab. The fire control system permits conducting fire without preliminary leveling and permits automatically setting the time for the free-flight rocket nose fuze to operate as well as time periods for self-destruction of antitank and antipersonnel mines. The warhead of the rockets may be fragmentation-high explosive, preformed fragmentation, or cluster, equipped with antipersonnel and antitank mines.

In the opinion of foreign experts, the Spanish TERUEL-3 MLRS is distinguished by a high level of technical perfection. It includes a 40-tube launcher, 140-mm free-flight rockets and loader/transporter. The launcher includes the launcher proper, mounted on a chassis with improved off-road capability, fire control system, and survey and communications as well as meteorological equipment. System control equipment and a crew of five are accommodated in an armored cab providing protection against small arms fire.

The launcher proper has two launch canisters (each with 20 launch tubes) mounted on an elevating frame installed on a rotating platform. The sight and panoramic sight for laying the launcher on the target are fastened to the frame by means of a special bracket. The canisters easily can be replaced by others with larger caliber tubes. Laying by angle of site and target azimuth is accomplished from the launcher cab using a two-speed hydraulic hoisting mechanism and two-speed electromechanical traversing mechanism. Emergency manual mechanisms are provided in case primary laying mechanisms malfunction. To reduce dispersion during firing, the chassis is equipped with four hydraulic jacks, on which the running gear is suspended.

The fire control system includes a digital computer, which permits not only calculating initial firing data, but also, depending on the nature of the target, determining the number of projectiles necessary for its destruction and the type of warhead and fuze. Warheads have been developed for the free-flight rockets—fragmentation-high explosive and several versions of cluster warheads with fragmentation and shaped-charge cluster submunitions and antitank and antipersonnel mines.

The modular ASTROS-II MLRS is in the Brazilian Army inventory. Its launcher has a common launcher proper and four expendable, interchangeable transport-launch canisters (they can be of three types). That design permits firing free-flight rockets of 127, 180 and 300 mm caliber (depending on caliber, there are eight, four or one in a bank). They have a fragmentation-high explosive or cluster warhead. A cluster warhead with dual-purpose cluster submunitions—antipersonnel/antitank—is in the development stage.

Control of all operations of preparing and conducting fire is exercised from the control console mounted in the driver's cab. The MLRS battery has in its makeup a fire control vehicle, from 4 to 8 launchers and one loader/transporter for each launcher. The running gear of all battery elements is standardized and is the chassis of the TECTRAN 10-ton vehicle with improved off-road capability, an armored cab and a 12.7-mm medium machinegun mounted on it.

The Swiss FIELDGUARD fire adjustment radar, computer and radio communications equipment are installed on the fire control vehicle. There also is equipment for maintaining radio communications with loader/transporters, forward observers and the command element.

Specifications and performance characteristics of the MLRS of a number of foreign states are given in the table.

Characteristics	MLRS	LARS-2	FIROS-30	TERUEL-3	ASTROS-II	RAFALE-145	LAR-160
Manufacturing country	USA	FRG	Italy	Spain	Brazil	France	Israel
Year operational	1983	1981	1987	1984	1980	1986	1984
Caliber, mm	227/240	110	122	140	127/180/300	145	160
Number of tubes	12	36	40	40	32/16/4	30	18/50
Range of fire, km	32/40	20	34	28	30/35/60	30	30
Salvo time, sec	48	18	16	40-45	-	-	18/50
Reloading time, min	5-6	10-15	5	5	-	-	6
Time to transfer from traveling to combat configuration, min	2	1.5	5	2	-	-	-
Projectile weight, kg	310/258	32.5	70	76	58/152/595	80	110
Warhead weight, kg	159/107	17.26	31	18.6	-	20	50
Crew	3	3	2-3	5	3	6	3
Maximum speed, km/hr	60	85	83	76	-	-	65
Range, km	485	800	600	-	-	-	-

AT YOUR REQUEST

Questions About Military Service Answered

94UM0591O Moscow ARMEYSKIY SBORNIK in Russian No 2, Aug 94 (signed to press 29 Jul 94) pp 94-95

[Answers to servicemen's questions given by Captain 1st Rank D. Ilyakov, Russian Federation Ministry of Defense Main Cadres Directorate: "Ask and We Answer"; photograph of Ilyakov given]

[FBIS Translated Text] ***Letters from readers continue to come to the editors in which they request answers to particular questions. As always, we selected the most typical ones and asked Captain 1st Rank D. Ilyakov, an officer of the Russian Federation Ministry of Defense Main Cadres Directorate, to answer them.***

I am performing military duty in the Russian Federation Armed Forces, but my parents live in Ukraine. During leave I took Ukrainian citizenship. Can I continue military service in the Russian Armed Forces?
Warrant Officer P. Konovalov, Ural Military District

In accordance with Article 35 of the Russian Federation Law "On Military Obligation and Military Service," persons who are not citizens of the Russian Federation cannot perform military service in the Russian Federation Armed Forces.

But if you have not been deprived of Russian Federation citizenship, there are no grounds for rejecting a continuation of military service in the Russian Federation Armed Forces.

* * *

I serve on a Northern Fleet ship. I wish to receive a civilian specialty during my service. Can I enter a correspondence-course department in a civilian higher educational institution?
Warrant Officer V. Sharov, Northern Fleet

That right is granted to servicemen by Article 19 of the Russian Federation Law "On the Status of Servicemen." It states in particular: "Servicemen performing contract military service are permitted to train in civilian educational institutions of vocational education without release from performance of duties of military service, and also in preparatory departments (courses) of higher and secondary specialized educational institutions."

But this question must be resolved individually in each specific case with consideration of the features of military service, inasmuch as a serviceman's training in a correspondence-course department of a civilian educational institution envisages his considerable separation from performance of official duties (granting of leave for taking entrance exams and leaves in the course of studies), which often is incompatible with the interests of military service.

Therefore these matters must be stipulated in the contract when entering into contract military service.

* * *

I participated in mopping up in the aftermath of the accident at the Chernobyl Atomic Electric Power Station and also fought in Afghanistan. I already have served 24 years in the Russian Federation Armed Forces. How long a leave must I be granted?
Senior Warrant Officer S. Leonov, Moscow Military District

The length of leaves and procedure for granting leaves to servicemen are specified by Article 11 of the Russian Federation Law "On the Status of Servicemen."

You must be granted a main leave of 60 days (45 days for years in service and 15 days as a war participant) and a supplementary leave of 14 days (as a participant in mopping up in the aftermath of the accident at the Chernobyl Atomic Electric Power Station, in accordance with Russian Federation Ministry of Defense Order No 387 of 1993). In accordance with the aforementioned order, you have the right to receive the main leave at a time convenient for you.

* * *

The Russian Federation Law "On Military Obligation and Military Service" provides for periods of military service under contract of 3, 5 or 10 years. I am 44 and do not wish to conclude a contract for 3 years, since I have made up my mind to be discharged from military service at age 45. What am I to do?

Senior Warrant Officer V. Kuzin

This same law provides an opportunity to conclude a contract not just for a period of 3, 5 or 10 years, but also for a lesser period until the limiting age for being on military service arrives, i.e., until reaching age 45.

* * *

I served in the Armed Forces for six years. Circumstances shaped up such that I was forced to be discharged from the Army in connection with the birth of a child. Four years have gone by. I wanted to enter military service as a warrant officer, but was refused. Is this right?

Warrant Officer (Reserve) A. Zolotova

You now will be able to enter into contract military service only after the child reaches the age of 8, since in accordance with Article 30 of the Russian Federation Law "On Military Obligation and Military Service," the fact that a woman has a child under 8 years of age can serve as grounds for refusal to conclude a contract for performance of military service.

* * *

How are years in service computed for a warrant officer in calculating a rated increase in case of an interruption in service?

Warrant Officer A. Skurikhin

A rated increase to a warrant officer's pay for years served is made from a calculation of overall years served from the moment of the first entry into military service as a warrant officer, excluding periods of an interruption in service.

* * *

I request you answer the following question for me. In connection with the main leave being 60 days, it was divided into two parts (30 days each in January and June). The serviceman was sick for two weeks while in the first half of the leave. Does he have the right to an extension of the second half of the leave?

Captain A. Belov

In accordance with Ministry of Defense Order No 100 of 1985, after recovery, leave is extended for the number of unused days for officers who fell ill during the main leave, on condition of presentation of an appropriate certificate certified by the treating physician and medical establishment chief (chief physician). As a rule, leave is extended immediately after the serviceman returns to the unit.

Legislation in force does not provide for postponing additional days of leave (compensation for days of illness on leave) to other time periods.

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